

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5,0 C
Edition : 16.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2250 R274
Type number : 0 460 414 045

Customer-specific information
Customer : PERKINS

Engine : TC MARINE

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery

Indicator setting:
Piston stroke mm: 1.28
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 3,9...4,3

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value bar: 7,1...7,7

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/
1000H.: 66,1...67,1
Dispersion cm³/
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 17,8...18,8

Low-idle speed regulation:

Speed 1/min: 400
Del. quantity cm³/
1000H.: 10,0...12,0
Dispersion cm³/
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 2500
Charge press. hPa: 800
Del. quantity cm³/
1000H.: 23,5...25,5

Start:

Speed 1/min: 100
Del. quantity : 62,0...98,0
mind cm³/1000H.: -

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 0,9...1,7
mm: (0,6...2,0)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: -
mm: (3,4...4,8)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1800
Charge press. hPa: 800
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: -

4th speed 1/min: 500
Charge press. hPa: 800
TD travel mm: 1,0...3,0
mm: -

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 3,3...5,3
mm: -

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump pressure bar: 6,1...6,7
2nd speed 1/min: 1800
Charge press. hPa: 800
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 800
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 2250
Charge press. hPa: 800
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 300
Del. quantity cm³/: 32,5...33,5
1000H.: (29,6...36,4)

2nd speed 1/min: 2600
Charge press. hPa: 800
Del. quantity cm³/: 0,0...6,0
1000H.: -

3rd speed 1/min: 2500
Charge press. hPa: 800
Del. quantity cm³/: -
1000H.: (20,0...29,0)

4th speed 1/min: 2250
Charge press. hPa: 800
Del. quantity cm³/: 68,5...72,5
1000H.: (67,9...73,1)

5th speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/: -
1000H.: (64,0...69,2)

6th speed 1/min: 500
Charge press. hPa: 800

Del. quantity cm³/: 58,3...64,3
1000H.: (57,9...64,7)
7th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm³/: -
1000H.: (15,7...20,9)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 2250
Del. quantity cm³/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 400
Del. quantity cm³/: -
1000H.: (6,5...15,5)
2nd speed 1/min: 500
Del. quantity cm³/: 2,0...8,0
1000H.: (0,0...9,5)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: -
ind. 1000H: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : K-0T
MS mm : 0,7...0,95
SVS max. mm : 3,0

Remarks:

Correction at adjusting nut (46)

Pushing electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 4,4 A
Edition : 17.07.87
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F1200 R277
Type number : 0 460 414 047

Customer-specific information
Customer : CASE

Engine : D 268/885

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 5,1...5,6

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 800

Del.quantity cm3/
1000H.: 81,5...82,5
Dispersion cm3/: 3,5
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 16,5...20,5
Dispersion cm3/: 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1260
Del.quantity cm3/
1000H.: 54,0...60,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,6...3,4
mm: (2,3...3,7)
2nd speed 1/min: 800
TD travel mm: -
mm: (4,6...6,0)
3rd speed 1/min: 1150
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 1150
Supply-pump
pressure bar: 5,0...5,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:
1st speed 1/min: 1400

Del. quantity cm³/: 0,0...3,0
 1000H.: -
 2nd speed 1/min: 1370
 Del. quantity cm³/: 0,0...10,0
 1000H.: -
 3rd speed 1/min: 1320
 Del. quantity cm³/: 10,0...40,0
 1000H.: -
 4th speed 1/min: 1260
 Del. quantity cm³/: -
 1000H.: (52,5...61,5)
 5th speed 1/min: 1150
 Del. quantity cm³/: 84,0...87,0
 1000H.: (82,5...88,5)
 6th speed 1/min: 800
 Del. quantity cm³/: -
 1000H.: (79,5...84,5)
 7th speed 1/min: 500
 Del. quantity cm³/: 75,5...79,5
 1000H.: (74,0...81,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
 Del. quantity cm³/: 0..3
 1000H.: -

Idle delivery:

Mfg. date: until : -
 1st speed 1/min: 350
 Del. quantity cm³/: -
 1000H.: (14,0...23,0)
 2nd speed 1/min: 450
 Del. quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
 Del. quantity cm³/: -
 ind. 1000H.: 80,0

2nd speed 1/min: 450
 Del. quantity cm³/: -
 ex. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : -
 Rated voltage : -

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
 KF mm : 5,4...5,7
 MS mm : 1,2...1,45

A04

SVS max. mm : 1,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 4,4 B
Edition : 17.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F1150 R277-1
Type number : 0 460 414 048

Customer-specific information
Customer : CASE

Engine : D 268/844S

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 800

Del. quantity cm3/
1000H.: 80,7...81,7
Dispersion cm3/: 3,5
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 350
Del. quantity cm3/
1000H.: 16,5...20,5
Dispersion cm3/: 3,5
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1190
Del. quantity cm3/
1000H.: 52,0...58,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 85,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 800
TD travel mm: -
mm: (2,8...4,2)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 3,1...3,7
2nd speed 1/min: 1100
Supply-pump pressure bar: 5,2...6,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm3/10s: 41...83
cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow quantity cm3/10s: 55...138
cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300

Del. quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1270
Del. quantity cm3/: 0,0...10,0
1000H.: -
3rd speed 1/min: 1220
Del. quantity cm3/: 10,0...40,0
1000H.: -
4th speed 1/min: 1190
Del. quantity cm3/: -
1000H.: (50,5...59,5)
5th speed 1/min: 1000
Del. quantity cm3/: 82,2...85,2
1000H.: (80,7...86,7)
6th speed 1/min: 800
Del. quantity cm3/: -
1000H.: (78,7...83,7)
7th speed 1/min: 500
Del. quantity cm3/: 76,7...80,7
1000H.: (75,2...82,2)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 1150
Del. quantity cm3/: 0...3
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 350
Del. quantity cm3/: -
1000H.: (14,0...23,0)
2nd speed 1/min: 450
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm3/: -
ind. 1000H.: 80,0
2nd speed 1/min: 450
Del. quantity cm3/: -
ax. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : 5,4...5,7
MS mm : 1,2...1,45

SVS max. mm : 3,8

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5,6 PS
Edition : 20.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/11F1500 R55-9
Type number : O 460 416 056

Customer-specific information
Customer : MAN

Engine : D0 226 MF

Power k: 100
Speed 1/mi: 3000

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,6
(from BDC): +-0,02 (0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Setting value mm: 6,0...6,4

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,7...6,3

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del. quantity cm³/ :
1000H.: 63,5...64,5
Dispersion cm³/ : 3,5
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 350
Del. quantity cm³/ :
1000H.: 7,0...11,0
Dispersion cm³/ : 3,0
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1550
Del. quantity cm³/ :
1000H.: 52,0...58,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 50,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 3,3...4,1
mm: (3,0...4,4)
2nd speed 1/min: 1000
TD travel mm: -
mm: (5,5...6,9)
3rd speed 1/min: 1400
TD travel mm: 8,6...9,4
mm: (8,3...9,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 4,2...4,8
2nd speed 1/min: 1500
Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1500
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1620
Del. quantity cm³/ : 16,0...24,0
1000H.: (15,5...24,5)
2nd speed 1/min: 1550
Del. quantity cm³/ : -
1000H.: (50,5...59,5)
3rd speed 1/min: 1500
Del. quantity cm³/ : 69,8...72,2
1000H.: (68,4...73,6)
4th speed 1/min: 1000
Del. quantity cm³/ : -
1000H.: (61,4...66,6)
5th speed 1/min: 600
Del. quantity cm³/ : 45,8...49,2
1000H.: (44,1...50,9)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1500
Del. quantity cm³/ : -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 350
Del. quantity cm³/ : -
1000H.: (4,5...13,5)
2nd speed 1/min: 450
Del. quantity cm³/ : 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 370
Del. quantity cm³/ : -
ind. 1000H.: 55,0
2nd speed 1/min: 500
Del. quantity cm³/ : -
ax. 1000H.: 55,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,7...6,0
MS	mm	:	1,2...1,45
SVS max.	mm	:	2,5
XK	mm	:	17,0...19,0
XL	mm	:	13,3...16,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N4
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 390 7152

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,8
mm : $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 750
Del. quantity cm3/
1000H.: 59,0...60,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1140
Del. quantity cm3/
1000H.: 45,0...51,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1100
TD travel mm: 3,1...3,9
mm: (2,8...4,2)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump
pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump
pressure bar: 2,3...2,9
3rd speed 1/min: 1100
Supply-pump
pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1140
Del. quantity cm3/: -
1000H.: (43,0...53,0)
5th speed 1/min: 1100
Del. quantity cm3/: 58,0...61,0
1000H.: (56,5...62,5)
6th speed 1/min: 900
Del. quantity cm3/: 57,5...60,5
1000H.: (56,0...62,0)
7th speed 1/min: 750
Del. quantity cm3/: -
1000H.: (56,5...62,5)
8th speed 1/min: 500
Del. quantity cm3/: 50,0...58,0
1000H.: (49,0...59,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 110
Del. quantity cm3/: -
ind. 1000H: 50,0

2nd speed 1/min: 200
Del. quantity cm3/: -
ex. 1000H: 50,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,2...1,45
SVS max.	mm	:	4,2
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N7
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 390 7964

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,8
mm : $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000H.: 75,5...71,5
Dispersion cm³/
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1050
Del. quantity cm³/
1000H.: 55,0...61,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1000
TD travel mm: 2,7...3,5
mm: (2,4...3,8)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9
3rd speed 1/min: 1000
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1150
Del. quantity cm³/
1000H.: -
2nd speed 1/min: 1130
Del. quantity cm³/
1000H.: -
3rd speed 1/min: 1090
Del. quantity cm³/
1000H.: -
4th speed 1/min: 1050
Del. quantity cm³/
1000H.: (55,0...61,0)
5th speed 1/min: 1000
Del. quantity cm³/
1000H.: (67,5...70,5)
6th speed 1/min: 900
Del. quantity cm³/
1000H.: (66,0...72,0)
7th speed 1/min: 750
Del. quantity cm³/
1000H.: (69,5...72,5)
8th speed 1/min: 500
Del. quantity cm³/
1000H.: (68,0...74,0)
Del. quantity cm³/
1000H.: (73,0...79,0)
Del. quantity cm³/
1000H.: (75,0...83,0)
Del. quantity cm³/
1000H.: (74,0...84,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm³/
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm³/
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm³/
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm³/
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del. quantity cm³/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,2...1,45
SVS max.	mm	:	4,2
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N3
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 390 8186

Customer-specific information
Customer : CUMMINS

Engine : 4 BT -3,9IND.

Power k: 68,5
Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 69,0...70,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1110
Del.quantity cm3/
1000H.: 49,0...55,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1050
TD travel mm: 2,8...3,6
mm: (2,5...3,9)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9

3rd speed 1/min: 1050
Supply-pump pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Oveflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
Oveflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1180
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1140
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1110
Del.quantity cm3/: -
1000H.: (47,0...57,0)
5th speed 1/min: 1050
Del.quantity cm3/: 66,0...69,0
1000H.: (64,5...70,5)
6th speed 1/min: 900
Del.quantity cm3/: -
1000H.: (66,5...72,5)
7th speed 1/min: 750
Del.quantity cm3/: 72,0...76,0
1000H.: (71,0...77,0)
8th speed 1/min: 500
Del.quantity cm3/: 72,0...80,0
1000H.: (71,0...81,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del. quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Del. quantity cm3/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,2...1,45
SVS max.	mm	:	3,8
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N5
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 390 8187

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : +-0,02 (0,04)

Start of delivery block
Piston stroke mm : 1,8
mm : +-0,02 (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 59,0...60,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1140
Del.quantity cm3/
1000H.: 45,0...51,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1100
TD travel mm: 3,1...3,9
mm: (2,8...4,2)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9
3rd speed 1/min: 1100
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Oveflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1140
Del.quantity cm3/: -
1000H.: (43,0...53,0)
5th speed 1/min: 1100
Del.quantity cm3/: 58,0...61,0
1000H.: (56,5...62,5)
6th speed 1/min: 900
Del.quantity cm3/: 57,5...60,5
1000H.: (56,0...62,0)
7th speed 1/min: 750
Del.quantity cm3/: -
1000H.: (56,5...62,5)
8th speed 1/min: 500
Del.quantity cm3/: 50,0...58,0
1000H.: (49,0...59,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 110
Del.quantity cm3/: -
ind. 1000H.: 50,0

2nd speed 1/min: 200
Del. quantity cm3/: -
ax. 1000H: 50,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,3...1,55
SVS max.	mm	:	4,2
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N2
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 390 9405

Customer-specific information
Customer : CUMMINS

Engine : 4 BT -3,9IND.

Power k: 68,5
Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min: 900
Del. quantity cm3/
1000H.: 69,0...70,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1110
Del. quantity cm3/
1000H.: 49,0...55,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1050
TD travel mm: 2,8...3,6
mm: (2,5...3,9)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9

3rd speed 1/min: 1050
Supply-pump pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1180
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1140
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1110
Del. quantity cm3/: -
1000H.: (47,0...57,0)
5th speed 1/min: 1050
Del. quantity cm3/: 66,0...69,0
1000H.: (64,5...70,5)
6th speed 1/min: 900
Del. quantity cm3/: -
1000H.: (66,5...72,5)
7th speed 1/min: 750
Del. quantity cm3/: 72,0...76,0
1000H.: (71,0...77,0)
8th speed 1/min: 500
Del. quantity cm3/: 72,0...80,0
1000H.: (71,0...81,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del. quantity cm³/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Del. quantity cm³/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,3...1,55
SVS max.	mm	:	3,0
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N6
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022
Customer Part-No. : 391 0628

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,8
mm : $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 75,5...71,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1050
Del.quantity cm3/
1000H.: 55,0...61,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,8...3,2)
3rd speed 1/min: 1000
TD travel mm: 2,7...3,5
mm: (2,4...3,8)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,8...1,4
2nd speed 1/min: 500
Supply-pump pressure bar: 2,3...2,9
3rd speed 1/min: 1000
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1000
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1150
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1130
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1090
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1050
Del.quantity cm3/: -
1000H.: (55,0...61,0)
5th speed 1/min: 1000
Del.quantity cm3/: 67,5...70,5
1000H.: (66,0...72,0)
6th speed 1/min: 900
Del.quantity cm3/: 69,5...72,5
1000H.: (68,0...74,0)
7th speed 1/min: 750
Del.quantity cm3/: -
1000H.: (73,0...79,0)
8th speed 1/min: 500
Del.quantity cm3/: 75,0...83,0
1000H.: (74,0...84,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: -
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del. quantity cm3/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,3...1,45
SVS max.	mm	:	4,2
XK	mm	:	18,8...20,8
XL	mm	:	12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 E1
Edition : 20.07.87
replaces : 11.12.86
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R226-1
Type number : 0 460 424 023

Customer-specific information
Customer : CUMMINS

Engine : 4BT-3.9

Power k: 53
Speed 1/mi: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: +-0,02 (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 67,0...68,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm3/
1000H.: 47,0...53,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,5...2,9)
3rd speed 1/min: 1150
TD travel mm: 3,2...4,0
mm: (2,9...4,3)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 0,9...1,5
2nd speed 1/min: 500
Supply-pump pressure bar: 2,5...3,1
3rd speed 1/min: 1150

Supply-pump pressure bar: 5,2...5,8

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1260
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1220
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1190
Del.quantity cm3/: -
1000H.: (45,0...55,0)
5th speed 1/min: 1150
Del.quantity cm3/: 63,5...66,5
1000H.: (62,0...68,0)
6th speed 1/min: 900
Del.quantity cm3/: -
1000H.: (64,5...70,5)
7th speed 1/min: 750
Del.quantity cm3/: 69,5...73,5
1000H.: (67,8...75,2)
8th speed 1/min: 500
Del.quantity cm3/: 68,0...76,0
1000H.: (67,0...77,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del. quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Del. quantity cm3/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,2...1,45
SVS max.	mm	:	4,0
XK	mm	:	18,8...20,8
XL	mm	:	11,7...15,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2
Type number : 0 460 424 024
Customer Part-No. : 390 7151

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

Power k: 64
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,6...5,2

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm3/
1000H.: 57,5...58,5
Dispersion cm3/: 4,6
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 335
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 40,0...46,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,5...2,9)
3rd speed 1/min: 1100
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 1,3...1,9
2nd speed 1/min: 750
Supply-pump pressure bar: 3,9...4,5

3rd speed 1/min: 1100
Supply-pump pressure bar: 5,4...6,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1370
Del.quantity cm3/: 0,0...15
1000H.: -
3rd speed 1/min: 1330
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1300
Del.quantity cm3/: -
1000H.: (38,0...48,0)
5th speed 1/min: 1250
Del.quantity cm3/: 55,5...58,5
1000H.: (54,0...60,0)
6th speed 1/min: 1100
Del.quantity cm3/: -
1000H.: (55,0...61,0)
7th speed 1/min: 750
Del.quantity cm3/: 55,5...59,5
1000H.: (54,5...60,5)
8th speed 1/min: 500
Del.quantity cm3/: 49,0...57,0
1000H.: (48,0...58,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 335
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 335
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del. quantity cm3/: -
ind. 1000H: 60,0

2nd speed 1/min: 230
Del. quantity cm3/: -
ax. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 1,2...1,45
SVS max. mm : 4,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N1
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2
Type number : O 460 424 024
Customer Part-No. : 391 2245

Customer-specific information
Customer : CUMMINS

Engine : 4 BT-3,9IND

Power k: 64
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,8
mm: 0,02 (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,6...5,2

Full-load del. w/out charge press.:

Speed 1/min: 1100
Del. quantity cm3/
1000H.: 57,5...58,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 335
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1300
Del. quantity cm3/
1000H.: 40,0...46,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 900
TD travel mm: -
mm: (1,5...2,9)
3rd speed 1/min: 1100
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump pressure bar: 1,3...1,9
2nd speed 1/min: 750
Supply-pump pressure bar: 3,9...4,5

3rd speed 1/min: 1100
Supply-pump pressure bar: 5,4...6,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1370
Del. quantity cm3/: 0,0...15
1000H.: -
3rd speed 1/min: 1330
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1300
Del. quantity cm3/: -
1000H.: (38,0...48,0)
5th speed 1/min: 1250
Del. quantity cm3/: 55,5...58,5
1000H.: (54,0...60,0)
6th speed 1/min: 1100
Del. quantity cm3/: -
1000H.: (55,0...61,0)
7th speed 1/min: 750
Del. quantity cm3/: 55,5...59,5
1000H.: (54,5...60,5)
8th speed 1/min: 500
Del. quantity cm3/: 49,0...57,0
1000H.: (48,0...58,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 335
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 335
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130

Del.quantity cm3/: -
ind. 1000H: 60,0

2nd speed 1/min: 230
Del.quantity cm3/: -
ax. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,2...1,45
SVS max.	mm	:	4,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N8
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1150 R231-1
Type number : 0 460 424 029
Customer Part-No. : 390 8196

Customer-specific information
Customer : CUMMINS

Engine : 4 BTA-3,9

Power k: 79
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm: 1,55
mm: $\pm 0,02$ (0,06)
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 85,5...86,5
Dispersion cm³ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 66,5...67,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³ : -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1170
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 63,0...69,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del. quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)
2nd speed 1/min: 750
Charge press. hPa: 1000

TD travel mm: -
mm: (3,3...4,7)
3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,9...4,5
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 350
Del. quantity cm³ : 82,0...83,0
1000H.: (79,5...85,5)

2nd speed 1/min: 1260
Charge press. hPa: 1000
Del. quantity cm³ : 0,0...2,0
1000H.: -

3rd speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³ : 0,0...15,0
1000H.: -

4th speed 1/min: 1220
Charge press. hPa: 1000
Del. quantity cm³ : 0,0...15,0
1000H.: -

5th speed 1/min: 1170
Charge press. hPa: 1000
Del. quantity cm³ : -
1000H.: (61,0...71,0)

6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³ : 77,5...80,5
1000H.: (76,0...82,0)

7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³ : 80,0...83,0
1000H.: (78,5...84,5)

8th speed 1/min: 850

Charge press. hPa: 1000
Del. quantity cm3/: -
1000H: (83,0...89,0)
9th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm3/: 90,0...98,0
1000H: (89,0...99,0)
10th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm3/: -
1000H: (64,0...70,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 350
Del. quantity cm3/: 26,0...34,0
1000H.: (25,0...35,0)
2nd speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
3rd speed 1/min: 450
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Charge press. hPa: -
Del. quantity cm3/: -
ind. 1000H: 65,0

2nd speed 1/min: 240
Charge press. hPa: -
Del. quantity cm3/: -
ax. 1000H: 65,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 1,1...1,35
SVS max. mm : 2,2

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N9
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1150 R231-1
Type number : 0 460 424 029
Customer Part-No. : 390 9407

Customer-specific information
Customer : CUMMINS

Engine : 4 BTA-3,9

Power k: 79
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0,5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,55
mm : $\pm 0,02$ (0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

B13

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity 1000H.: 85,5...86,5
Dispersion cm³/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 66,5...67,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/ : -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1170
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 63,0...69,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del. quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)
2nd speed 1/min: 750
Charge press. hPa: 1000

TD travel mm: -
mm: (3,3...4,7)
3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,9...4,5
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 350
Del.quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
2nd speed 1/min: 1260
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...2,0
1000H.: -
3rd speed 1/min: 1250
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1220
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
5th speed 1/min: 1170
Charge press. hPa: 1000
Del.quantity cm³/: -
1000H.: (61,0...71,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del.quantity cm³/: 77,5...80,5
1000H.: (76,0...82,0)
7th speed 1/min: 1000
Charge press. hPa: 1000
Del.quantity cm³/: 80,0...83,0
1000H.: (78,5...84,5)
8th speed 1/min: 850

Charge press. hPa: 1000
Del.quantity cm³/: -
1000H.: (83,0...89,0)
9th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 90,0...98,0
1000H.: (89,0...99,0)
10th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: -
1000H.: (64,0...70,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 350
Del.quantity cm³/: 26,0...34,0
1000H.: (25,0...35,0)
2nd speed 1/min: 375
Del.quantity cm³/: -
1000H.: (6,0...16,0)
3rd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Charge press. hPa: -
Del.quantity cm³/: -
ind. 1000H.: 65,0
2nd speed 1/min: 240
Charge press. hPa: -
Del.quantity cm³/: -
ax. 1000H.: 65,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 1,2...1,45
SVS max. mm : 2,2

Remarks:

Correction at adjusting nut (46)

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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5,8 B3
Edition : 29.06.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 L73
Type number : D 460 426 020

Customer-specific information
Customer : PERKINS

Engine : T6.354.4

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0,6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02$ (0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 600
Charge press. hPa: -
Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 600
Charge press. hPa: -

B16

Setting value bar: 3,4...4,0

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 750
Del.quantity cm3/
1000H.: 95,5...96,5
Dispersion cm3/ : 3,5
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 91,5...92,5

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 10,0...14,0
Dispersion cm3/ : 3,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1480
Charge press. hPa: 750
Del.quantity cm3/
1000H: 42,0...48,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 100,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 0,4...1,2
mm: (0,1...1,5)

2nd speed 1/min: 600
Charge press. hPa: -
TD travel mm: -
mm: (2,6...4,0)

3rd speed 1/min: 800
Charge press. hPa: -
TD travel mm: 3,6...4,4
mm: (3,3...4,7)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Charge press. hPa: -

Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 600
Charge press. hPa: -
Supply-pump
pressure bar: 3,1...3,5
3rd speed 1/min: 1300
Charge press. hPa: -
Supply-pump
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1300
Charge press. hPa: -
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 320
LDA stroke mm: 3,5
Del. quantity cm3/: 92,5...94,5
1000H.: (39,8...97,2)
2nd speed 1/min: 1550
Charge press. hPa: 750
Del. quantity cm3/: 5,0...13,0
1000H.: (4,0...14,0)
3rd speed 1/min: 1420
Del. quantity cm3/: -
1000H.: (40,0...50,0)
4th speed 1/min: 1300
Charge press. hPa: 750
Del. quantity cm3/: 89,0...92,0
1000H.: (87,5...93,5)
5th speed 1/min: 1000
Charge press. hPa: -
Del. quantity cm3/: -
1000H.: (89,0...95,0)
6th speed 1/min: 1000
Charge press. hPa: 750
Del. quantity cm3/: -
1000H.: (93,0...99,0)
7th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm3/: 88,0...92,0
1000H.: (86,3...93,7)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 1300
Del. quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 300
Del. quantity cm3/: -
1000H.: (7,0...17,0)
2nd speed 1/min: 350
Del. quantity cm3/: 0,0...1,0
1000H.: -
3rd speed 1/min: 400
Del. quantity cm3/: 0,0...1,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm3/: -
ind. 1000H.: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,3
MS	mm	:	1,1...1,3
SVS max.	mm	:	6,0
XK	mm	:	20,2...22,2
XL	mm	:	10,6...13,9

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5,6 K
Edition : 30.06.87
replaces : 09.83
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1400 R120
Type number : O 460 426 028

Customer-specific information
Customer : MAN

Engine : D 0226 MK/170

Power k: 125
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC) : $\pm 0,02$ (0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 630
Charge press. hPa: 1000
Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 630
Charge press. hPa: 1000

Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 106,5...107,5
Dispersion cm³/
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 630
Del. quantity cm³/
1000H.: 77,5...78,5

Low-idle speed regulation:

Speed 1/min: 300
Del. quantity cm³/
1000H.: 10,0...16,0
Dispersion cm³/
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1440
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 87,0...93,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 80,0

Load-dependent start of delivery:

Speed 1/min: 630

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1000
TD travel mm: 2,0...2,8
mm: (1,7...3,1)
2nd speed 1/min: 630
Charge press. hPa: 1000
TD travel mm: -
mm: (2,7...4,1)
3rd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 4,0...4,8
mm: (3,7...5,1)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7
2nd speed 1/min: 1400
Charge press. hPa: 1000
Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 630
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Overflow : 55...139
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 630
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 4,5
Del. quantity cm³/: 101,5...102,5
1000H.: (99,0...105,0)
2nd speed 1/min: 1620
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...2,0
1000H.: -
3rd speed 1/min: 1590
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1540
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...15,0
1000H.: -
5th speed 1/min: 1440
Charge press. hPa: 1000
Del. quantity cm³/: -
1000H.: (85,0...95,0)
6th speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/: 99,5...102,5
1000H.: (98,0...104,0)
7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/: -
1000H.: (104,0...110,0)
8th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/: 102,0...106,0
1000H.: (100,3...107,7)
9th speed 1/min: 630
Charge press. hPa: 1000

Del. quantity cm³/: 106,0...110,0
1000H.: (104,3...111,7)
10th speed 1/min: 630
Charge press. hPa: -
Del. quantity cm³/: 77,5...78,5
1000H.: (75,0...81,0)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 1400
Del. quantity cm³/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 300
Del. quantity cm³/: -
1000H.: (8,0...18,0)
2nd speed 1/min: 350
Del. quantity cm³/: 0,0...5,0
1000H.: -
3rd speed 1/min: 400
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: -
ind. 1000H.: 80,0
2nd speed 1/min: 450
Del. quantity cm³/: -
ax. 1000H.: 85,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,7...6,0
MS	mm	:	0,7...0,95
SVS max.	mm	:	4,3

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U2
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1325 R198
Type number : 0 460 426 063
Customer Part-No. : 390 8212

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-5,9

Power k: 93
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: $\pm 0,02$ (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

B20

Speed 1/min: 850
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 850
Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del. quantity cm3/
1000H.: 56,5...57,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1450
Del. quantity cm3/
1000H: 37,0...43,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 50,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 850
TD travel mm: -
mm: (3,3...4,7)
3rd speed 1/min: 1100
TD travel mm: 5,4...6,2
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,5...3,1
2nd speed 1/min: 1100
Supply-pump
pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1400
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1580
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1530
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1490
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1450
Del. quantity cm3/: -
1000H.: (36,0...44,0)
5th speed 1/min: 1400
Del. quantity cm3/: 53,5...56,5
1000H.: (52,0...58,0)
6th speed 1/min: 1100
Del. quantity cm3/: -
1000H.: (54,0...60,0)
7th speed 1/min: 850
Del. quantity cm3/: 52,5...56,5
1000H.: (51,5...57,5)
8th speed 1/min: 500
Del. quantity cm3/: 39,0...47,0
1000H.: (38,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 375
Del. quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (7,0...15,0)
2nd speed 1/min: 450
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H: 60,0

2nd speed 1/min: 400

Del. quantity cm3/: -
ax. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,4...1,65
SVS max.	mm	:	1,2
XK	mm	:	18,8...20,8
XL	mm	:	9,6...13,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 5,6 I1
Edition : 30.05.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R120-5
Type number : 0 460 426 074

Customer-specific information
Customer : MAN

Engine : D 0226 MTXE/51

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
With thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC): $\pm 0,02$ (0,04)

Indicator setting:
Piston stroke mm: 1
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 700
Charge press. hPa: 1000
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 700

Charge press. hPa: 1000
Setting value bar: 4,5...5,1

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm3/
1000H.: 93,5...94,5
Dispersion cm3/ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm3/
1000H.: 79,0...80,0

Low-idle speed regulation:

Speed 1/min: 300
Del. quantity cm3/
1000H.: 41,0...47,0
Dispersion cm3/ : 3,5
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1180
Charge press. hPa: 1000
Del. quantity cm3/
1000H.: 64,0...70,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 80,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 0,2...1,0
mm: (0,0...1,3)
2nd speed 1/min: 700
Charge press. hPa: 1000
TD travel mm: -
mm: (2,0...3,4)
3rd speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 3,8...4,6
mm: (3,5...4,9)
4th speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 4,5...5,3
mm: (4,2...5,6)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,6...4,2
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 5,4...6,0
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm3/10s: 41...83
(26...98)
2nd speed 1/min: 1100
Charge press. hPa: -
Overflow quantity cm3/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
Charge-air pressure-setting point hPa: 175
LDA stroke mm: 5,7
Del. quantity cm3/ : 90,5...91,5
1000H.: (88,0...94,0)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm3/ : 0,0...1,5
1000H.: -
3rd speed 1/min: 1260
Charge press. hPa: 1000
Del. quantity cm3/ : 0,0...15,0
1000H.: -
4th speed 1/min: 1220
Charge press. hPa: 1000
Del. quantity cm3/ : 0,0...15,0
1000H.: -
5th speed 1/min: 1180
Charge press. hPa: 1000
Del. quantity cm3/ : -
1000H.: (62,0...72,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/ : 92,5...95,5
1000H.: (91,0...97,0)
7th speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm3/ : 95,0...99,0
1000H.: (94,0...100,0)
8th speed 1/min: 700
Charge press. hPa: 1000

Del. quantity cm3/: -
1000H: (91,0...97,0)
9th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm3/: 90,0...94,0
1000H: (88,3...95,7)
10th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm3/: 79,0...80,0
1000H: (76,5...82,5)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 1100
Del. quantity cm3/: -
1000H.: --

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 300
Del. quantity cm3/: -
1000H.: (39,0...49,0)
2nd speed 1/min: 450
Del. quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 320
Del. quantity cm3/: -
ind. 1000H: 90,0
2nd speed 1/min: 440
Del. quantity cm3/: -
ax. 1000H: 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,7...6,0
MS mm : 1,0...1,25
SVS max. mm : 2,5

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U1
Edition : 07.07.87
replaces : -
Calibrating oil : IS04113
Injection pump : VE 6/12F1100 R225-9
Type number : D 460 426 075
Customer Part-No. : 390 8206

Customer-specific information
Customer : CUMMINS

Engine : 6BT-590 IND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,5
mm : $\pm 0,02$ (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm³/
1000H.: 64,5...65,5
Dispersion cm³/
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1100
Del.quantity cm³/
1000H: 46,0...52,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: -
mm: (2,9...4,3)
3rd speed 1/min: 1050
TD travel mm: 5,0...5,8
mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 1050
Supply-pump
pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1160
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1130
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1100
Del. quantity cm3/: -
1000H.: (44,0...54,0)
5th speed 1/min: 1050
Del. quantity cm3/: 60,5...63,5
1000H.: (59,0...65,0)
6th speed 1/min: 900
Del. quantity cm3/: 62,0...65,0
1000H.: (60,5...66,5)
7th speed 1/min: 750
Del. quantity cm3/: -
1000H.: (62,0...68,0)
8th speed 1/min: 500
Del. quantity cm3/: 64,0...72,0
1000H.: (63,0...73,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H.: 70,0
2nd speed 1/min: 350
Del. quantity cm3/: -
ax. 1000H.: 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,3...1,55
SVS max.	mm	:	2,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U
Edition : 07.07.87
replaces : -
Calibrating oil : ISO4113

Injection pump : VE 6/12F1100 R225-9
Type number : 0 460 426 075
Customer Part-No. : 390 8208

Customer-specific information
Customer : CUMMINS

Engine : 6BT-590 1ND.

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,5
mm : $\pm 0,02$ (0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000H.: 64,5...65,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1100
Del. quantity cm3/
1000H.: 46,0...52,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: -
mm: (2,9...4,3)
3rd speed 1/min: 1050
TD travel mm: 5,0...5,8
mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,4...3,0
2nd speed 1/min: 1050
Supply-pump pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1160
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1130
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1100
Del. quantity cm3/: -
1000H.: (44,0...54,0)
5th speed 1/min: 1050
Del. quantity cm3/: 60,5...63,5
1000H.: (59,0...65,0)
6th speed 1/min: 900
Del. quantity cm3/: 62,0...65,0
1000H.: (60,5...66,5)
7th speed 1/min: 750
Del. quantity cm3/: -
1000H.: (62,0...68,0)
8th speed 1/min: 500
Del. quantity cm3/: 64,0...72,0
1000H.: (63,0...73,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H.: 70,0
2nd speed 1/min: 350
Del. quantity cm3/: -
ax. 1000H.: 70,0

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U4
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 390 8200

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-5,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: +-0,02 (0,06)
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 76,5...77,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1150
Del.quantity cm3/
1000H.: 49,5...55,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,1...2,9
mm: (1,8...3,2)
2nd speed 1/min: 750
TD travel mm: -
mm: (3,8...5,2)
3rd speed 1/min: 1100
TD travel mm: 5,8...6,6
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 1100
Supply-pump
pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1150
Del.quantity cm3/: -
1000H.: (47,5...57,5)
5th speed 1/min: 1100
Del.quantity cm3/: 67,5...70,5
1000H.: (66,0...72,0)
6th speed 1/min: 900
Del.quantity cm3/: 72,5...75,5
1000H.: (71,0...77,0)
7th speed 1/min: 750
Del.quantity cm3/: -
1000H.: (74,0...80,0)
8th speed 1/min: 500
Del.quantity cm3/: 61,0...69,0
1000H.: (60,0...70,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: -
ind. 1000H: 85,0
2nd speed 1/min: 240
Del.quantity cm3/: -
ax. 1000H: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 0,9..1,15
SVS max. mm : 1,2
XK mm : 20,2...22,2
XL mm : 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U6
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : O 460 426 082
Customer Part-No. : 390 8201

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-590IND

Power k: 105
Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: +-0,02 (0,06)
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,4...3,8

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 74,5...75,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1100
Del.quantity cm3/
1000H.: 52,0...58,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
2nd speed 1/min: 750
TD travel mm: -
mm: (2,9...4,3)
3rd speed 1/min: 1050
TD travel mm: 4,6...5,4
mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,6...3,2
2nd speed 1/min: 1050
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1170
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1130
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1100
Del.quantity cm3/: -
1000H.: (50,0...60,0)
5th speed 1/min: 1050
Del.quantity cm3/: 68,5...71,5
1000H.: (67,0...73,0)
6th speed 1/min: 900
Del.quantity cm3/: 72,0...75,0
1000H.: (70,5...76,5)
7th speed 1/min: 750
Del.quantity cm3/: -
1000H.: (72,0...78,0)
8th speed 1/min: 500
Del.quantity cm3/: 57,0...65,0
1000H.: (56,0...66,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 250
Del. quantity cm³/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	0,9...1,15
SVS max.	mm	:	2,0
XK	mm	:	20,2...22,2
XL	mm	:	10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U3
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 391 0251

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-5,9IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,5
mm : $\pm 0,02$ (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min: 750
Del. quantity cm3/
1000H.: 76,5...77,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1150
Del. quantity cm3/
1000H.: 49,5...55,5

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,1...2,9
mm: (1,8...3,2)
2nd speed 1/min: 750
TD travel mm: -
mm: (3,8...5,2)
3rd speed 1/min: 1100
TD travel mm: 5,8...6,6
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,6...3,2
2nd speed 1/min: 1100
Supply-pump pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del. quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1150
Del. quantity cm3/: -
1000H.: (47,5...57,5)
5th speed 1/min: 1100
Del. quantity cm3/: 67,5...70,5
1000H.: (66,0...72,0)
6th speed 1/min: 900
Del. quantity cm3/: 72,5...75,5
1000H.: (71,0...77,0)
7th speed 1/min: 750
Del. quantity cm3/: -
1000H.: (74,0...80,0)
8th speed 1/min: 500
Del. quantity cm3/: 61,0...69,0
1000H.: (60,0...70,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H.: 85,0
2nd speed 1/min: 240
Del. quantity cm3/: -
ax. 1000H.: 85,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0

Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : -

KF mm : 5,1...5,4

MS mm : 0,9...1,15

SVS max. mm : 1,2

XK mm : 20,2...22,2

XL mm : 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 US
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 391 0252

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-590IND

Power k: 105
Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: +-0,02 (0,06)
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,4...3,8

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm3/
1000H.: 74,5...75,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: -
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1100
Del.quantity cm3/
1000H: 52,0...58,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
2nd speed 1/min: 750
TD travel mm: -
mm: (2,9...4,3)
3rd speed 1/min: 1050
TD travel mm: 4,6...5,4
mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,6...3,2
2nd speed 1/min: 1050
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (25...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1170
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1130
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1100
Del.quantity cm3/: -
1000H.: (50,0...60,0)
5th speed 1/min: 1050
Del.quantity cm3/: 68,5...71,5
1000H.: (67,0...73,0)
6th speed 1/min: 900
Del.quantity cm3/: 72,0...75,0
1000H.: (70,5...76,5)
7th speed 1/min: 750
Del.quantity cm3/: -
1000H.: (72,0...78,0)
8th speed 1/min: 500
Del.quantity cm3/: 57,0...65,0
1000H.: (56,0...66,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 250
Del. quantity cm³/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	0,9...1,15
SVS max.	mm	:	2,0
XK	mm	:	20,2...22,2
XL	mm	:	10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 D
Edition : 20.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240
Type number : 0 460 426 084

Customer-specific information
Customer : PERKINS

Engine : T6 60 CC

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,25
(from BDC): +-0,02 (0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 6,9...7,5

Full-load del. with charge press.:

Speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 96,0...97,0
Dispersion cm³/
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000H.: 87,0...88,0

Low-idle speed regulation:

Speed 1/min: 300
Charge press. hPa: -
Del. quantity cm³/
1000H.: 16,5...20,5
Dispersion cm³/
1000H.: (5,0)

Full-load speed regulation:

Speed 1/min: 1450
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 47,0...53,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 120,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0,3...1,1
mm: (0,0...1,4)

KSB solenoid-operated

valve volt: 1200
Timing valve volt: 1000
TD travel mm: -
mm: (1,3...2,7)

3rd speed 1/min: 1300
Charge press. hPa: 1000

TD travel mm: 2,0...2,8
mm: (1,7...3,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,9...4,5
2nd speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
Del. quantity cm³/
1000H.: (90,5...96,5)
2nd speed 1/min: 1550
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: -

3rd speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (13,0...27,0)

4th speed 1/min: 1450
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (44,0...56,0)

5th speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (72,0...86,0)

6th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (92,5...98,5)

7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (95,0...101,0)

8th speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (93,5...99,5)

9th speed 1/min: 700

Charge press. hPa: -
Del. quantity cm3/: -
1000H: (84,5...100,5)
10th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm3/: 80,0...83,0
1000H: (78,5...84,5)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 1300
Del. quantity cm3/: 0..3
1000H.: -

Electr. shutoff:
Speed 1/min: 300
ELAB volt: -
Del. quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 300
Del. quantity cm3/: -
1000H.: (13,5...23,5)
2nd speed 1/min: 350
Del. quantity cm3/: 4,5...10,5
1000H.: (2,5...12,5)
3rd speed 1/min: 400
Del. quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm3/: -
ind. 1000H: 95,0
2nd speed 1/min: 230
Del. quantity cm3/: -
ex. 1000H: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : K-0T
MS mm : 0,7...0,95
SVS max. mm : 3,2

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U,
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R173-5
Type number : 0 460 426 086
Customer Part-No. : 390 4545

Customer-specific information
Customer : CUMMINS

Engine : 6 BTA 590IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,85
mm : $\pm 0,02$ (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000

Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3,3...3,9

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 82,5...83,5
Dispersion cm³/1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/1000H.: 67,5...68,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/1000H.: 8,0...14,0
Dispersion cm³/1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 60,0...66,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del. quantity cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
TD travel mm: 0,1...0,9
mm: (0,0...1,2)
2nd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: -
mm: (0,8...2,2)
3rd speed 1/min: 1100

Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,3...2,9
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 4,7...5,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
Del. quantity cm³/1000H.: 77,5...78,5
1000H.: (75,0...81,0)
2nd speed 1/min: 1260
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...3,0
3rd speed 1/min: 1240
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...15,0
4th speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...15,0
5th speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/1000H.: (58,0...68,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 78,0...81,0
mm: (76,5...82,5)
7th speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 79,5...82,5
mm: (78,0...84,0)
8th speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/1000H.: (80,0...86,0)

9th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm3/: 79,0...87,0
1000H: (78,0...88,0)
10th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm3/: -
1000H: (65,0...71,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 280
Charge press. hPa: -
Del.quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 380
Charge press. hPa: -
Del.quantity cm3/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 1,1...1,35
SVS max. mm : 5,8
XK mm : 18,8...20,8
XL mm : 11,6...15,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U8
Edition : 08.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R173-S
Type number : 0 460 426 086
Customer Part-No. : 390 4727

Customer-specific information
Customer : CUMMINS

Engine : 6 BTA 590IND

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02$ (0,04)

Start of delivery block
Piston stroke mm : 1,85
mm : $\pm 0,02$ (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000

Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3,3...3,9

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 82,5...83,5
Dispersion cm³/1000H.: 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/1000H.: 67,5...68,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/1000H.: 8,0...14,0
Dispersion cm³/1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 60,0...66,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del. quantity cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
TD travel mm: 0,1...0,9
mm: (0,0...1,2)
2nd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: -
mm: (0,8...2,2)
3rd speed 1/min: 1100

Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,3...2,9
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 4,7...5,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
Del. quantity cm³/1000H.: 77,5...78,5
(75,0...81,0)
2nd speed 1/min: 1260
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...3,0
3rd speed 1/min: 1240
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...15,0
4th speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 0,0...15,0
5th speed 1/min: 1150
Charge press. hPa: 1000
Del. quantity cm³/1000H.: (58,0...68,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 78,0...81,0
(76,5...82,5)
7th speed 1/min: 900
Charge press. hPa: 1000
Del. quantity cm³/1000H.: 79,5...82,5
(78,0...84,0)
8th speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/1000H.: (80,0...86,0)

9th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm3/: 79,0...87,0
1000H: (78,0...88,0)
10th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm3/: -
1000H: (65,0...71,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 280
Charge press. hPa: -
Del. quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 380
Charge press. hPa: -
Del. quantity cm3/: -
ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,1...1,35
SVS max.	mm	:	2,8
XK	mm	:	18,8...20,8
XL	mm	:	11,6...15,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S7
Edition : 20.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R225-14
Type number : 0 460 426 092

Customer-specific information
Customer : CUMMINS

Engine : 6 BT-5.9

Power k: 96
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,5
mm: +-0,02 (0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm3/
1000H.: 60,5...61,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 44,0...50,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: -
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,4...3,0
2nd speed 1/min: 1100
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1450
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1370
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1330
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1300
Del.quantity cm3/: -
1000H.: (42,0...52,0)
5th speed 1/min: 1250
Del.quantity cm3/: 57,8...60,8
1000H.: (56,3...62,3)
6th speed 1/min: 1100
Del.quantity cm3/: -
1000H.: (58,0...64,0)
7th speed 1/min: 750
Del.quantity cm3/: 58,5...62,5
1000H.: (56,8...64,2)
8th speed 1/min: 500
Del.quantity cm3/: 51,0...59,0
1000H.: (50,0...60,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed 1/min: 500
Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 270
Del.quantity cm3/: -
ind. 1000H: 55,0
2nd speed 1/min: 450

Del. quantity cm3/: -
ax. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,3...1,55
SVS max.	mm	:	1,6
XK	mm	:	20,2...22,2
XL	mm	:	10,8...14,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 L4
Edition : 14.07.87
replaces : 11.12.86
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R173-8
Type number : 0 460 426 101

Customer-specific information
Customer : CUMMINS

Engine : 6BTA-5,9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,04)

Start of delivery block
Piston stroke mm: 1,85
mm: +-0,02 (0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 1,4...1,8

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 83,0...84,0
Dispersion cm³/
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000H.: 40,0...41,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/
1000H.: 6,0...12,0

Full-load speed regulation:

Speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 63,0...69,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
TD travel mm: 0,4...1,2
mm: (0,1...1,5)
2nd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: -
mm: (0,9...2,3)
3rd speed 1/min: 1050
Charge press. hPa: 1000
TD travel mm: 2,3...3,1
mm: (2,0...3,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 1050
Charge press. hPa: 1000
Supply-pump pressure bar: 2,3...3,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
Del. quantity cm³/
1000H.: 67,0...68,0
mm: (64,5...70,5)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: -
3rd speed 1/min: 1370
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 0,0...15,0
4th speed 1/min: 1330
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 0,0...15,0
5th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (61,0...71,0)
6th speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 74,5...77,5
mm: (73,0...79,0)
7th speed 1/min: 1050
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 79,0...82,0
mm: (77,5...83,5)
8th speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: (80,5...86,5)
9th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 83,0...91,0
mm: (82,0...92,0)

10th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm³/: -
1000H: (37,5...43,5)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 375
Del. quantity cm³/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm³/: -
1000H.: (4,0...14,0)
2nd speed 1/min: 500
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: -
ind. 1000H: 60,0

2nd speed 1/min: 370
Del. quantity cm³/: -
ex. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,4
MS mm : 1,3...1,55
SVS max. mm : 2,2
XK mm : 18,8...20,8
XL mm : 12,9...16,3

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 2,5 A
Edition : 29.06.87
replaces : 10.12.86
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R84
Type number : 0 460 494 079

Customer-specific information
Customer : PEUGEOT

Engine : XD3 505D

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,0...5,6

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del. quantity cm3/
1000H.: 37,5...38,5
Dispersion cm3/ : 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400
Del. quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/ : 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2325
Del. quantity cm3/
1000H.: 25,5...31,5

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 45,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 1250
TD travel mm: -
mm: (3,5...4,9)
3rd speed 1/min: 2000
TD travel mm: 8,1...8,9
mm: (7,8...9,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump
pressure bar: 3,0...3,6
2nd speed 1/min: 2200
Supply-pump
pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 400
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:
1st speed 1/min: 2550

Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 2450
Del. quantity cm3/: 4,5...12,5
1000H.: (4,5...12,5)
3rd speed 1/min: 2325
Del. quantity cm3/: -
1000H.: (24,5...32,5)
4th speed 1/min: 2200
Del. quantity cm3/: 39,0...41,0
1000H.: (37,8...42,2)
5th speed 1/min: 2000
Del. quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)
6th speed 1/min: 1500
Del. quantity cm3/: -
1000H.: (35,8...40,2)
7th speed 1/min: 600
Del. quantity cm3/: 35,5...38,5
1000H.: (34,0...40,0)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: -
Del. quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 400
Del. quantity cm3/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 440
Del. quantity cm3/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm3/: -
ind. 1000H: 45,0
2nd speed 1/min: 450
Del. quantity cm3/: -
ax. 1000H: 45,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : K1
KF mm : 5,4...5,7
MS mm : 1,0...1,25

SVS max. mm : 4,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 G
Edition : 06.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2100 R22-5
Type number : O 460 494 109

Customer-specific information
Customer : SOFIM

Engine : 8140.61.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02 (0,03)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1800
Setting value mm: 7,4...7,8

Supply-pump pressure:

Speed 1/min: 1800
Setting value bar: 6,3...6,9

Full-load del. w/out charge press.:

Speed 1/min : 2000

Del. quantity cm3/
1000H.: 37,5...38,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 370
Del. quantity cm3/
1000H.: 8,0...12,0
Dispersion cm3/: 2,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2350
Del. quantity cm3/
1000H.: 19,0...25,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 1800

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 1,8...2,8
mm: (1,6...3,0)
2nd speed 1/min: 1800
TD travel mm: -
mm: (6,9...8,3)
3rd speed 1/min: 2100
TD travel mm: 8,4...9,2
mm: (8,1...9,5)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump pressure bar: 2,9...3,5
2nd speed 1/min: 2100
Supply-pump pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity cm3/10s: 41...83
2nd speed 1/min: 2100

Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2500
Del. quantity cm3/: 0,0...4,5
1000H.: -
2nd speed 1/min: 2350
Del. quantity cm3/: -
1000H.: (18,0...16,0)
3rd speed 1/min: 2100
Del. quantity cm3/: 36,7...39,3
1000H.: (35,8...40,2)
4th speed 1/min: 2000
Del. quantity cm3/: -
1000H.: (35,8...40,2)
5th speed 1/min: 1100
Del. quantity cm3/: 43,5...46,5
1000H.: (42,8...47,2)
6th speed 1/min: 600
Del. quantity cm3/: 35,3...38,3
1000H.: (33,8...39,8)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 2100
Del. quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 370
Del. quantity cm3/: -
1000H.: (6,0...14,0)
2nd speed 1/min: 420
Del. quantity cm3/: 0,0...1,5
1000H.: -
3rd speed 1/min: 500
Del. quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm3/: -
ind. 1000H.: 37,0
2nd speed 1/min: 480
Del. quantity cm3/: 32,0...38,0
ax. 1000H.: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,4...5,7
MS	mm	:	1,7..1,95
SVS max.	mm	:	2,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 2,5 A1
Edition : 30.06.87
replaces : 10.12.86
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R84-1
Type number : 0 460 494 125

Customer-specific information
Customer : PEUGEOT

Engine : XD3 505D

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,0...5,6

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del. quantity cm3/
1000H.: 37,5...38,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2325
Del.quantity cm3/
1000H.: 25,5...31,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 45,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 1250
TD travel mm: -
mm: (3,5...4,9)
3rd speed 1/min: 2000
TD travel mm: 8,1...8,9
mm: (7,8...9,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump pressure bar: 3,0...3,6
2nd speed 1/min: 2200
Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 400
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2550

Del.quantity cm3/: 0,0...2,0
1000H.: -

2nd speed 1/min: 2450
Del.quantity cm3/: 4,5...12,5
1000H.: (4,5...12,5)

3rd speed 1/min: 2325
Del.quantity cm3/: -
1000H.: (24,5...32,5)

4th speed 1/min: 2200
Del.quantity cm3/: 39,0...41,0
1000H.: (37,8...42,2)

5th speed 1/min: 2000
Del.quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)

6th speed 1/min: 1500
Del.quantity cm3/: -
1000H.: (35,8...40,2)

7th speed 1/min: 600
Del.quantity cm3/: 35,5...38,5
1000H.: (34,0...40,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: -
Del.quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 400
Del.quantity cm3/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 440
Del.quantity cm3/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm3/: -
ind. 1000H: 45,0

2nd speed 1/min: 450
Del.quantity cm3/: -
ax. 1000H: 45,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : K1
KF mm : 5,4...5,7
MS mm : 1,2...1,45

SVS max. mm : 4,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W3
Edition : 07.07.87
replaces : 03.84
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R149
Type number : 0 460 494 138

Customer-specific information
Customer : VW

Engine : 086T

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750

Del. quantity cm³/
1000H.: 43,5...44,5
Dispersion cm³/ : 2,5
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 475
Charge press. hPa: -
Del. quantity cm³/
1000H.: 6,0...10,0
Dispersion cm³/ : 2,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del. quantity cm³/
1000H.: 10,0...14,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del. quantity : -
mind cm³/1000H.: 35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,8...2,6
mm: (1,5...2,9)
2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: -
mm: (3,3...4,7)
3rd speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump
pressure bar: 2,5...3,1
2nd speed 1/min: 2250
Charge press. hPa: 750

Supply-pump
pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow : 55...70
quantity cm³/10s: (50...75)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow : 82...112
quantity cm³/10s: (77...117)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting
point hPa: 300
LDA stroke mm: 4,0
Del. quantity cm³/ : 33,5...34,5
1000H.: (31,0...37,0)
2nd speed 1/min: 2750
Charge press. hPa: 750
Del. quantity cm³/ : 0,0...3,0
1000H.: -
3rd speed 1/min: 2525
Charge press. hPa: 750
Del. quantity cm³/ : -
1000H.: (8,0...16,0)
4th speed 1/min: 2425
Charge press. hPa: 750
Del. quantity cm³/ : 22,0...32,0
1000H.: (21,0...33,0)
5th speed 1/min: 2250
Charge press. hPa: 750
Del. quantity cm³/ : 37,5...39,5
1000H.: (36,3...40,7)
6th speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/ : -
1000H.: (41,8...46,2)
7th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/ : -
1000H.: (21,0...27,0)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 475
ELAB volt: -
Del. quantity cm³/ : 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 475
Del. quantity cm³/ : -
1000H.: (4,0...12,0)

2nd speed 1/min: 1200
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400
Charge press. hPa: -
Del. quantity cm³/: -
ind. 1000H: 22,0

2nd speed 1/min: 500
Charge press. hPa: -
Del. quantity cm³/: -
ax. 1000H: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,2...1,45
SVS max. mm : 3,8
XK mm : 18,4...20,4
XL mm : 8,6...12,0

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X2
Edition : 17.07.87
replaces : 02.04.87
Calibrating oil : ISO 4113
Injection pump : VE 4/ 9F2250 R211
Type number : 0 460 494 172

Customer-specific information
Customer : VW

Engine : 086-1,6L. LLK

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 4,9...5,5

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750

Del. quantity cm³/
1000H.: 41,5...42,5
Dispersion cm³/
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del. quantity cm³/
1000H.: 34,3...37,3

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del. quantity cm³/
1000H.: 9,0...11,0
Dispersion cm³/
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Charge press. hPa: -
Del. quantity cm³/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del. quantity cm³/
1000H: 7,0...13,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: -
mm: (3,3...4,7)

3rd speed 1/min: 1800
Charge press. hPa: 750
TD travel mm: 4,8...5,6
mm: (4,5...5,9)

4th speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 750
Supply-pump pressure bar: 2,0...2,6
2nd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 6,0
Del.quantity cm3/: 32,5...33,5
1000H.: (30,0...36,0)
2nd speed 1/min: 2650
Charge press. hPa: 750
Del.quantity cm3/: 0,0...6,0
1000H.: -
3rd speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm3/: -
1000H.: (6,0...14,0)
4th speed 1/min: 2425
Charge press. hPa: 750
Del.quantity cm3/: 21,5...31,5
1000H.: (20,5...32,5)
5th speed 1/min: 2250
Charge press. hPa: 750
Del.quantity cm3/: 35,5...37,5
1000H.: (34,3...38,7)
6th speed 1/min: 1500
Charge press. hPa: -
Del.quantity cm3/: -
1000H.: (32,8...38,8)
7th speed 1/min: 1500
Charge press. hPa: 750
Del.quantity cm3/: -
1000H.: (39,8...44,2)
8th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm3/: 23,5...24,5
1000H.: (21,0...27,0)
9th speed 1/min: 500
Charge press. hPa: 750

Del.quantity cm3/: 31,0...34,0
1000H.: (29,5...35,5)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 425
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 400
Del.quantity cm3/: -
1000H.: (4,5...15,5)
2nd speed 1/min: 425
Del.quantity cm3/: 5,0...9,0
1000H.: (1,5...12,5)
High Idle:
Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: (3,0...13,0)

Residual:

Speed 1/min: 500
Del.quantity : 1,0...3,0
1000H.: (0,0...5,5)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm3/: -
ind. 1000H: 35,0
2nd speed 1/min: 350
Del.quantity cm3/: -
ax. 1000H: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: K1
KF	mm	: 5,7...6,0
MS	mm	: 1,2...1,45
SVS max.	mm	: 2,8

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X5
Edition : 17.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R254
Type number : 0 460 494 200

Customer-specific information
Customer : VW

Engine : 086-1,6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Charge press. hPa: 500
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250
Charge press. hPa: 500
Setting value bar: 4,0...4,6

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 500

Del.quantity cm3/
1000H.: 27,5...28,5
Dispersion cm3/ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 25,3...26,7

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm3/
1000H.: 12,0...14,0
Dispersion cm3/ : 2,0
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Charge press. hPa: -
Del.quantity cm3/
1000H.: 2,5...3,5(+1,5)

Full-load speed regulation:

Speed 1/min: 2475
Charge press. hPa: 5001
Del.quantity cm3/
1000H.: 11,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 500
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 1250
Charge press. hPa: 500
TD travel mm: -
mm: (1,6...3,0)
3rd speed 1/min: 2250
Charge press. hPa: 500
TD travel mm: 6,6...7,4
mm: (6,3...7,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 500
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 2250
Charge press. hPa: 500
Supply-pump pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 500
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting point hPa: 225
Del.quantity cm3/ : 26,5...27,5
1000H.: (24,0...30,0)
2nd speed 1/min: 2700
Charge press. hPa: 500
Del.quantity cm3/ : 0,0...6,0
1000H.: -
3rd speed 1/min: 2475
Charge press. hPa: 500
Del.quantity cm3/ : -
1000H.: (10,0...18,0)
4th speed 1/min: 2400
Charge press. hPa: 500
Del.quantity cm3/ : 16,0...26,0
1000H.: (15,0...27,0)
5th speed 1/min: 1000
Charge press. hPa: -
Del.quantity cm3/ : -
1000H.: (23,0...29,0)
6th speed 1/min: 1000
Charge press. hPa: 150
Del.quantity cm3/ : 25,3...26,7
1000H.: (23,0...29,0)
7th speed 1/min: 1000
Charge press. hPa: 300
Del.quantity cm3/ : 27,5...28,5
1000H.: (25,8...30,2)
8th speed 1/min: 600
Charge press. hPa: 500
Del.quantity cm3/ : 21,0...24,0
1000H.: (19,5...25,5)
9th speed 1/min: 2250
Charge press. hPa: 500
Del.quantity cm3/ : 27,5...29,5
1000H.: (26,3...30,7)
10th speed 1/min: 1000

Charge press. hPa: 500
Del. quantity cm3/: -
1000H: (25,8...30,2)

Zero delivery (stop):

Electr. shutoff:
Speed 1/min: 425
ELAB volt: -
Del. quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (9,0...17,0)
2nd speed 1/min: 425
Del. quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)

High Idle:
Speed 1/min: 525
Del. quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:
Speed 1/min: 500
Del. quantity : 3,2...5,2
1000H.: (1,7...6,7)

Automatic starting fuel delivery:

1st speed 1/min: 180
Del. quantity cm3/: -
ind. 1000H: 35,0

2nd speed 1/min: 380
Del. quantity cm3/: -
ax. 1000H: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,7...6,0
MS mm : 1,3...1,55
SVS max. mm : -

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W19
Edition : 27.07.87
replaces : 02.04.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R221-2
Type number : 0 460 494 207

Customer-specific information
Customer : VW

Engine : 086-1,6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del. quantity cm³/
1000H.: 28,5...29,5
Dispersion cm³/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 11,0...13,0

Dispersion cm3/: 2,0
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600
Del.quantity cm3/
1000H.: 11,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,0...1,8
mm: (0,7...2,1)
2nd speed 1/min: 1250
TD travel mm: -
mm: (1,6...3,0)
3rd speed 1/min: 1800
TD travel mm: 4,2...5,0
mm: (3,9...5,3)
4th speed 1/min: 2400
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 2400
Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 600

Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2400
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800
Del.quantity cm3/: -
1000H.: 0,0...6,0
2nd speed 1/min: 2600
Del.quantity cm3/: -
1000H.: (10,0...18,0)
3rd speed 1/min: 2500
Del.quantity cm3/: 19,0...29,0
1000H.: (18,0...30,0)
4th speed 1/min: 2400
Del.quantity cm3/: 27,5...29,5
1000H.: (26,3...30,7)
5th speed 1/min: 1000
Del.quantity cm3/: -
1000H.: (26,8...31,2)
6th speed 1/min: 600
Del.quantity cm3/: 22,5...25,5
1000H.: (21,0...27,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (8,0...16,0)
2nd speed 1/min: 425
Del.quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 500
Del.quantity : 2,5...4,5
1000H.: (1,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 180
Del.quantity cm3/: -
ind. 1000H.: 35,0
2nd speed 1/min: 380

Del. quantity cm3/: -
ax. 1000H: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,3...1,55
SVS max.	mm	: 3,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X5
Edition : 16.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R270
Type number : 0 460 494 210

Customer-specific information
Customer : VW

Engine : 086-1,6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 27,5...28,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm3/
1000H.: 11,0...13,0
Dispersion cm3/: 2,0
1000H.: (3,0)
Residual-Delivery Setting
Speed 1/min: 550
Del. quantity cm3/
1000H.: 2,5...3,5(+1,5)

Full-load speed regulation:

Speed 1/min: 2475
Del. quantity cm3/
1000H.: 11,0...17,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 1250
TD travel mm: -
mm: (1,6...3,0)
3rd speed 1/min: 2250
TD travel mm: 6,6...7,4
mm: (6,3...7,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 2250
Supply-pump pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2250

Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700
Del. quantity cm3/: 0,0...6,0
1000H.: -
2nd speed 1/min: 2475
Del. quantity cm3/: -
1000H.: (10,0...18,0)
3rd speed 1/min: 2400
Del. quantity cm3/: 16,0...26,0
1000H.: (15,0...27,0)
4th speed 1/min: 2250
Del. quantity cm3/: 26,5...28,5
1000H.: (25,3...29,7)
5th speed 1/min: 1000
Del. quantity cm3/: -
1000H.: (25,8...30,2)
6th speed 1/min: 600
Del. quantity cm3/: 21,0...24,0
1000H.: (19,5...25,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del. quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del. quantity cm3/: -
1000H.: (8,0...16,0)
2nd speed 1/min: 425
Del. quantity cm3/: 5,5...8,5
1000H.: (3,0...11,0)
High Idle:
Speed 1/min: 525
Del. quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 500
Del. quantity : 3,2...5,2
1000H.: (1,7...6,7)

Automatic starting fuel delivery:

1st speed 1/min: 180
Del. quantity cm3/: -
ind. 1000H.: 35,0
2nd speed 1/min: 380
Del. quantity cm3/: -
ax. 1000H.: 30,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4

KF mm : 5,7...6,0

MS mm : 1,3...1,55

SVS max. mm : 3,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,9 C
Edition : 17.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R282
Type number : 0 460 494 214

Customer-specific information
Customer : FIAT

Engine : M 705

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del. quantity cm3/
1000H.: 34,5...35,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 390
Del.quantity cm3/
1000H.: 9,0...13,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2450
Del.quantity cm3/
1000H.: 22,0...28,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
2nd speed 1/min: 1500
TD travel mm: -
mm: (3,8...5,2)
3rd speed 1/min: 2300
TD travel mm: 7,1...7,9
mm: (6,8...8,2)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump pressure bar: 2,9...3,4
2nd speed 1/min: 2300
Supply-pump pressure bar: 7,4...8,0

Overflow quantity at overflow valve:

1st speed 1/min: 400
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2750

Del.quantity cm3/: 0,0...3,5
1000H.: -

2nd speed 1/min: 2650
Del.quantity cm3/: 3,5...10,5
1000H.: (3,0...11,0)

3rd speed 1/min: 2450
Del.quantity cm3/: -
1000H.: (22,8...27,2)

4th speed 1/min: 2300
Del.quantity cm3/: 35,5...38,5
1000H.: (34,8...39,2)

5th speed 1/min: 1500
Del.quantity cm3/: -
1000H.: (32,8...37,2)

6th speed 1/min: 1000
Del.quantity cm3/: 34,2...36,8
1000H.: (33,3...37,7)

7th speed 1/min: 600
Del.quantity cm3/: 36,0...39,0
1000H.: (34,5...40,5)

Zero delivery (stop):

Mech. shutoff:
Speed 1/min: 2300
Del.quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 390
Del.quantity cm3/: -
1000H.: (7,0...15,0)
2nd speed 1/min: 440
Del.quantity cm3/: 1,0...7,0
1000H.: (0,0...8,0)
3rd speed 1/min: 500
Del.quantity cm3/: 0,0...2,5
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm3/: -
ind. 1000H.: 45,0

2nd speed 1/min: 400
Del.quantity cm3/: -
ax. 1000H.: 46,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	3,2...3,4
KF	mm	:	5,7...6,0
MS	mm	:	1,7...1,95
SVS max.	mm	:	2,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 D2
Edition : 07.07.87
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R162-2
Type number : O 460 494 215

Customer-specific information
Customer : PEUGEOT

Engine : XUD9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 1250
Del. quantity cm³/
1000H.: 29,5...30,5
Dispersion cm³/
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 7,0...9,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2400
Del.quantity cm3/
1000H.: 20,0...26,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 44,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,4...1,2
mm: (0,1...1,5)
2nd speed 1/min: 1250
TD travel mm: -
mm: (2,8...4,2)
3rd speed 1/min: 2000
TD travel mm: 7,1...7,9
mm: (6,8...8,2)

Supply-pump pressure characteristic:

1st speed 1/min: 800
Supply-pump pressure bar: 3,0...3,6
2nd speed 1/min: 2000
Supply-pump pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2300

Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650
Del.quantity cm3/: 0,0...7,0
1000H.: -
2nd speed 1/min: 2500
Del.quantity cm3/: 10,0...16,0
1000H.: (9,0...17,0)
3rd speed 1/min: 2400
Del.quantity cm3/: -
1000H.: (19,0...27,0)
4th speed 1/min: 2250
Del.quantity cm3/: 29,8...31,8
1000H.: (28,6...33,0)
5th speed 1/min: 2000
Del.quantity cm3/: 30,6...32,6
1000H.: (29,4...33,8)
6th speed 1/min: 1250
Del.quantity cm3/: -
1000H.: (27,8...32,5)
7th speed 1/min: 800
Del.quantity cm3/: 30,5...33,5
1000H.: (29,0...35,0)
8th speed 1/min: 500
Del.quantity cm3/: 29,5...32,5
1000H.: (28,0...34,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 375
Del.quantity cm3/: -
1000H.: (4,0...12,0)

High Idle:

Speed 1/min: 470
Del.quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 550
Del.quantity : -
1000H.: 0,0...7,0

Arrangement of drivers on engine- speed lever for exhaust-gas- recirculation valve linkage (guage)

1st speed 1/min: 1125
Del.quantity cm3/: 17,0...19,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: -
ind. 1000H: 40,0

2nd speed 1/min: 300
Del. quantity cm³/: -
ax. 1000H: 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,3...1,55
SVS max.	mm	: -
XK	mm	: 17,0...19,0
XL	mm	: 14,2...17,6

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,0 P10
 Edition : 25.8.87
 Superceeded : -
 Calibrating oil : ISO 4113
 Combination no. : 0 400 074 923
 Injection pump
 Pump designation : PES4M50C32ORS103-1
 EP type number : 0 410 054 025
 Governor
 Governor design. : RSF375/2200M19-1
 Governor no. : 0 420 021 065

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM615 -2,0L

1st version kW : 46.0

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1,70...1,80
 : (1,65...1,85)

Contr.-rod trav.mm: 20,0

Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
 Tolerance + - : 0,00 (1,00)

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 12,00...12,10

Del.quantity cm3/ : 3,1...3,2

100H.: (3,0...3,3)

Dispersion cm3/ : 0,25

100H.: (0,3)

2nd speed 1/min: 375

Contr.-rod trav. m: 6,2...6,4

Del.quantity cm3/ : 0,6...0,7

100H.: (0,5...0,9)

Dispersion cm3/ : 0,1

100H.: (0,15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 31,0...32,0

1000H.: (30,0...33,0)

Dispersion cm3/ : 2,5

1000H.: (3,0)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...0

3rd c-rod trav.mm : 7,30...7,70

Speed 1/min : 0...2400

4th speed 1/min : 2950

C-rod trav.mm : 0,00...1,00

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 1000

Contr.-rod trav.mm: 1,4...1,5

LOWEST RATED SPEED I

Control-lever

position degrees: 12...16

Setting point w/out aux. spring

Speed 1/min : 375

Contr.-rod trav.mm: 6,3

Testing:

Speed 1/min : 250

C-rod trav.mm min : 11,0

Speed 1/min : 375
C-rod trav.mm : 6,2...6,4
C-rod trav.mm : 2,0
Speed 1/min : 740...840
Speed 1/min : 1000
C-rod trav.mm max : 1,50

SET IDLE AUXILIARY SPRING

Speed 1/min : 450
Contr.-rod trav.mm: 4,80...5,00
: (4,70...5,10)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 12,00...12,10
2nd speed 1/min : 1800
C-rod trav.mm : 11,40...11,60
3rd speed 1/min : 2100
C-rod trav.mm : 10,90...11,10

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1800
Del.quantity cm3/ : 32,5...34,0
1000H.: (31,5...35,0)
Dispersion cm3/ : 2,50
1000H.: (3,00)
Speed 1/min : 2100
Del.quantity cm3/ : 31,5...33,5
1000H.: (30,5...34,5)
Dispersion cm3/ : 2,50
1000H.: (3,00)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 55,0...0,0
100H.: (55,0...0,0)
Contr.-rod trav.mm: 20,1...0,00

HIGH IDLE

Speed 1/min : 2400
Contr.-rod trav.mm: 7,30...7,70
Del.quantity cm3/ : 15,0...19,0
1000H.: (14,0...20,0)
Dispersion cm3/ : 2,50
1000H.: (3,00)

LOW IDLE

Speed 1/min : 375
Contr.-rod trav.mm: 6,2...6,4
Del.quantity cm3/ : 6,0...7,0
1000H.: (5,5...9,0)
Dispersion cm3/ : 1,00
1000H.: (1,50)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,4 V4
Edition : 26.06.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 074 924
Injection pump
Pump designation : PES4M55C32ORS104-1
EP type number : 0 410 054 963
Governor
Governor design. : RSF375/2200M12-1
Governor no. : 0 420 021 064

Customer-spec. information
Customer : DB

Engine : OM616 -2.4 l-
1st version kW : 55.0

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 012
Inlet press., bar : 1.00
Calibrating nozzle-holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32
Prestroke mm : 1.70...1.80
 : (1.65...1.85)
Contr.-rod trav.mm: 20.00...0.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed 1/mi: 1000
Contr.-rod trav.mm: 13.40...13.50
Del.quantity cm3/ : 3.7...3.8
100H.: (3.6...3.9)
Dispersion cm3/ : 0.2
100H.: (0.3)
2nd speed 1/min: 375.0
Contr.-rod trav. m: 6.4...6.6
Del.quantity cm3/ : 0.6...0.7
100H.: (0.5...0.9)
Dispersion cm3/ : 0.1
100H.: (0.15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1000
Del.quantity cm3/ : 37.0...38.0
1000H.: (36.0...39.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 50...0
3rd c-rod trav.mm : 7.40...7.80
Speed 1/min : 0...2400
4th speed 1/min : 2950
C-rod trav.mm : 0.00...1.00

SET IDLE CONTROL-LEVER

POSITION
Speed 1/min : 1000
Contr.-rod trav.mm: 1.4...1.5

LOWEST RATED SPEED I

Control-lever
position degrees: 8...12
Setting point w/out aux. spring
Speed 1/min : 375
Contr.-rod trav.mm: 6.5

Testing:
Speed 1/min : 250
C-rod trav.mm min : 10.50

Speed 1/min : 375
C-rod trav.mm : 6.40...6.60
C-rod trav.mm : 2.00
Speed 1/min : 750...850
Speed 1/min : 1000
C-rod trav.mm max : 1.50

SET IDLE AUXILIARY SPRING

Speed 1/min : 450
Contr.-rod trav.mm: 5.1...5.3
: (5.0...5.4)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 13.40...13.50
2nd speed 1/min : 1600
C-rod trav.mm : 12.90...13.10
3rd speed 1/min : 2100
C-rod trav.mm : 12.20...12.40

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1600
Del.quantity cm3/ : 38.0...39.5
1000H.: (37.0...41.5)
Dispersion cm3/ : 2.50
1000H.: (3.00)
Speed 1/min : 2100
Del.quantity cm3/ : 36.5...38.5
1000H.: (35.5...39.5)
Dispersion cm3/ : 2.50
1000H.: 3.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 53.0...0.0
1000H.: (53.0...0.0)
Contr.-rod trav.mm: 20.10...0.00

HIGH IDLE

Speed 1/min : 2400
Contr.-rod trav.mm: 7.40...7.80
Del.quantity cm3/ : 15.0...19.0
1000H.: (14.0...20.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)

LOW IDLE

Speed 1/min : 375
Contr.-rod trav.mm: 6.40...6.60
Del.quantity cm3/ : 6.0...7.0
1000H.: (5.5...9.0)
Dispersion cm3/ : 1.00
1000H.: (1.50)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

-Control-lever position 47°. No
change in control-rod travel after
switchover point up to 550 1/min,
control-lever position 30°. Speed
range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,4 V3
Edition : 15.05.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 074 925
Injection pump
Pump designation : PES4M55C32ORS107-1
EP type number : 0 410 054 977
Governor
Governor design. : RSF375/2200M18-2
Governor no. : 0 420 021 058

Customer-spec. information
Customer : DB

Engine : OM616

1st version kW : 50.0

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 012

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Contr.-rod trav.mm: 18.50...21.50

Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 13.20...13.30

Del.quantity cm3/ : 3.7...3.8

100H.: (3.6...3.9)

Dispersion cm3/ : 0.2

100H.: (0.3)

2nd speed 1/min: 375.0

Contr.-rod trav. m: 6.5...6.7

Del.quantity cm3/ : 0.6...0.7

100H.: (0.5...0.9)

Dispersion cm3/ : 0.1

100H.: (0.15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 37.0...38.0

1000H.: (36.0...39.0)

Dispersion cm3/ : 2.50

1000H.: (3.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...0

3rd c-rod trav.mm : 8,20...8,60

Speed 1/min : 0...2500

4th speed 1/min : 2950

C-rod trav.mm : 0.00...1.00

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 1000

Contr.-rod trav.mm: 1,90...2,00

LOWEST RATED SPEED I

Control-lever

position degrees: 9...13

Setting point w/out aux. spring

Speed 1/min : 375

Contr.-rod trav.mm: 6.6

Testing:

Speed 1/min : 250

C-rod trav.mm min : 11.00

Speed 1/min : 375
C-rod trav.mm : 6.50...6.70
C-rod trav.mm : 2.50
Speed 1/min : 700...800
Speed 1/min : 1000
C-rod trav.mm max : 2.00

SET IDLE AUXILIARY SPRING

Speed 1/min : 450
Contr.-rod trav.mm: 4.80...5.00
: (4.70...5.10)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 13.20...13.30
2nd speed 1/min : 1800
C-rod trav.mm : 12.60...12.80
3rd speed 1/min : 2200
C-rod trav.mm : 12.10...12.30

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1800
Del.quantity cm3/ : 38.0...40.0
1000H.: (37.0...41.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)
Speed 1/min : 2200
Del.quantity cm3/ : 38.0...40.0
1000H.: (37.0...41.0)
Dispersion cm3/ : 2.50
1000H.: 3.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 53.0...0.0
1000H.: (53.0...0.0)
Contr.-rod trav.mm: 20.30...0.00

HIGH IDLE

Speed 1/min : 2500
Contr.-rod trav.mm: 8.20...8.60
Del.quantity cm3/ : 20.0...24.0
1000H.: (19.0...25.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)

LOW IDLE

Speed 1/min : 375
Contr.-rod trav.mm: 6.50...6.70
Del.quantity cm3/ : 6.0...7.0
1000H.: (5.5...9.0)
Dispersion cm3/ : 1.00
1000H.: (1.50)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,0 P11
Edition : 25.8.87
Superceeded : -
Calibrating oil : ISO 4113
Combination no. : 0 400 074 926
Injection pump
Pump designation : PES4M55C32ORS161
EP type number : 0 410 054 964
Governor
Governor design. : RSF375/2300M56-3
Governor no. : 0 420 021 056

Customer-spec. information
Customer : DB

Engine : OM601-LVP

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6,00x2,00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1,50...1,60
: (1,45...1,65)

Contr.-rod trav.mm: 20,00...22,00

Cam sequence : 1- 3- 4- 2-

SD ang. spacing°CS: 0-90-180-270
Tolerance + - : 0,00 (1,00)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 11,3...11,4

Del.quantity cm3/ : 3,10...3,20

100H.: (3,00...3,30)

Dispersion cm3/ : 0,25

100H.: (0,30)

2nd speed 1/min: 375

Contr.-rod trav. m: 5,2...5,4

Del.quantity cm3/ : 0,5...0,6

100H.: (0,4...0,9)

Dispersion cm3/ : 0,1

100H.: (0,15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 31,0...32,0

1000H.: (30,0...33,0)

Dispersion cm3/ : 2,5

1000H.: (3,0)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...0

3rd c-rod trav.mm : 7,10...7,50

Speed 1/min : 0,0...2500

4th speed 1/min : 2950

C-rod trav.mm : 0,0...1,0

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 1000

Contr.-rod trav.mm: 1,9...2,0

LOWEST RATED SPEED I

Control-lever

position degrees: 13...17

Setting point w/out aux. spring

Speed 1/min : 375

Contr.-rod trav.mm: 5,3

Testing:

Speed 1/min : 250
C-rod trav.mm min : 10,0
Speed 1/min : 375
C-rod trav.mm : 5,20...5,40

SET IDLE AUXILIARY SPRING

Speed 1/min : 400
Contr.-rod trav.mm: 4,20...4,40
: (4,10...4,50)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 11,3...11,4
2nd speed 1/min : 1800
C-rod trav.mm : 10,9...11,1
3rd speed 1/min : 2250
C-rod trav.mm : 10,3...10,5

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 1000
Pressure hPa : 930
Contr.-rod trav.mm: 0,10...0,50

Measurement

Speed 1/min : 1000
1st pressure hPa : 840
C-rod trav.mm : 1,10...1,30
2nd pressure hPa : 700
C-rod trav.mm : 2,30...2,70

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1800
Del.quantity cm3/ : 34,0...35,5
1000H.: (33,0...36,5)
Dispersion cm3/ : 2,50
1000H.: (3,00)
Speed 1/min : 2250
Del.quantity cm3/ : 32,0...34,0
1000H.: (31,0...35,0)
Dispersion cm3/ : 2,50
1000H.: (3,00)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 55,0
1000H.: (55,0)
Contr.-rod trav.mm: 20,1

HIGH IDLE

Speed 1/min : 2500
Contr.-rod trav.mm: 7,10...7,50

Del.quantity cm3/ : 16,0...20,0
1000H.: (15,0...21,0)
Dispersion cm3/ : 2,50
1000H.: (3,00)

LOW IDLE

Speed 1/min : 375
Contr.-rod trav.mm: 5,2...5,4
Del.quantity cm3/ : 5,0...6,0
1000H.: (4,5...9,0)
Dispersion cm3/ : 1,00
1000H.: (1,50)

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 18.3...18.7°
(18.2...18.8°) angular displacement of
the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,5 F7
Edition : 25.8.87
Superceeded : -
Calibrating oil : ISO 4113
Combination no. : 0 400 075 967
Injection pump
Pump designation : PESSM55C32ORS153
EP type number : 0 410 055 991
Governor
Governor design. : RSF340/2300MS9-18
Governor no. : 0 420 021 078

Customer-spec. information
Customer : DB

Engine : OM602

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness : 6.00x2.00x600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2,00...2,10
: (1,95...2,15)
Contr.-rod trav.mm: 20,00...22,00
Cam sequence : 1- 2- 4- 5- 3-

SD ang. spacing°CS: 0-72-144-216-288
Tolerance + - : 0.00 (1.00)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 11,3...11,4

Del.quantity cm3/ : 3,1...3,2

100H.: (3,0...3,3)

Dispersion cm3/ : 0,25

100H.: (0,30)

2nd speed 1/min: 315

Contr.-rod trav. m: 5,4...5,6

Del.quantity cm3/ : 0,5...0,6

100H.: (0,45...0,90)

Dispersion cm3/ : 0,10

100H.: (0,15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 31,5...32,5

1000H.: (30,5...33,5)

Dispersion cm3/ : 2,50

1000H.: (3,00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...0

3rd c-rod trav.mm : 7,8...8,2

Speed 1/min : 0...2500

4th speed 1/min : 2950

C-rod trav.mm : 0,00...1,00

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 1000

Contr.-rod trav.mm: 0,9...1,0

LOWEST RATED SPEED I

Control-lever

position degrees: 13...17

Setting point w/out aux. spring

Speed 1/min : 315

Contr.-rod trav.mm: 5,5

Testing:

Speed 1/min : 220
C-rod trav.mm min : 8,0
Speed 1/min : 315
C-rod trav.mm : 5,4...5,6
C-rod trav.mm : 1,5
Speed 1/min : 630...730
Speed 1/min : 1000
C-rod trav.mm max : 1,0

SET IDLE AUXILIARY SPRING

Speed 1/min : 380
Contr.-rod trav.mm: 4,20...4,40
: (4,10...4,50)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 11,3...11,4
2nd speed 1/min : 1800
C-rod trav.mm : 10,9...11,1
3rd speed 1/min : 2200
C-rod trav.mm : 10,6...10,8

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1800
Del.quantity cm3/ : 34,0...35,5
1000H.: (33,0...36,5)
Dispersion cm3/ : 2,50
1000H.: (3,00)
Speed 1/min : 2200
Del.quantity cm3/ : 33,5...35,5
1000H.: (32,5...36,5)
Dispersion cm3/ : 2,50
1000H.: (3,00)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 55,0
1000H.: (55,0)
Contr.-rod trav.mm: 20,1

HIGH IDLE

Speed 1/min : 2500
Contr.-rod trav.mm: 7,8...8,2
Del.quantity cm3/ : 22,0...26,0
1000H.: (21,0...27,0)
Dispersion cm3/ : 2,5
1000H.: (3,0)

LOW IDLE

Speed 1/min : 315
Contr.-rod trav.mm: 5,4...5,6
Del.quantity cm3/ : 5,0...6,0
1000H.: (4,5...9,0)
Dispersion cm3/ : 1,0
1000H.: (1,5)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed 1/min : 340
Contr.-rod trav.mm: (12,6...14,0)
Del.quantity cm3/ : (33,0...41,0)
1000H.: -

Electric current A: 1,8
Control lever at full-load stop
Speed 1/min : 2950
Contr.-rod trav.mm: 0,0...1,0
Electric current
short-duration A : 3,0
Starting test
Speed 1/min : 100
Del.quantity cm3/ : -
min. 1000H.: 55,0

Remarks:

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 2,5 F8
 Edition : 26.8.87
 Superceeded : -
 Calibrating oil : ISO 4113
 Combination no. : 0 400 075 974
 Injection pump
 Pump designation : PESSM55C32ORS162
 EP type number : 0 410 055 983
 Governor
 Governor design. : RSF340/2300M60-5
 Governor no. : 0 420 021 063

Customer-spec. information
 Customer : DB

Engine : OM602-LVP MJ:86

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 1,70...1,80
 : (1,65...1,85)
 Contr.-rod trav.mm: 20,00...22,00
 Cam sequence : 1- 2- 4- 5- 3

SD ang. spacing°CS: 0-72-144-216-288
 Tolerance + - : 0.00 (1.00)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 11,3...11,4

Del.quantity cm3/ : 3,1...3,2

100H.: (3,0...3,3)

Dispersion cm3/ : 0,25

100H.: (0,30)

2nd speed 1/min: 315

Contr.-rod trav. m: 5,2...5,4

Del.quantity cm3/ : 0,5...0,6

100H.: (0,45...0,9)

Dispersion cm3/ : 0,10

100H.: (0,15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1000
 Del.quantity cm3/ : 31,0...32,0
 1000H.: (30,0...33,0)
 Dispersion cm3/ : 2,50
 1000H.: (3,00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 50...0
 3rd c-rod trav.mm : 7,1...7,5
 Speed 1/min: 0...2500
 4th speed 1/min: 2950
 C-rod trav.mm : 0,0...1,0

SET IDLE CONTROL-LEVER

POSITION
 Speed 1/min : 1000
 Contr.-rod trav.mm: 1,9...2,0

LOWEST RATED SPEED 1

Control-lever
 position degrees: 13...17
 Setting point w/out aux. spring
 Speed 1/min : 315
 Contr.-rod trav.mm: 5,3

Testing:

Speed 1/min : 220
C-rod trav.mm min : 7,5
Speed 1/min : 315
C-rod trav.mm : 5,2...5,4
C-rod trav.mm : 2,5
Speed 1/min : 530...630
Speed 1/min : 1000
C-rod trav.mm max : 2,0

SET IDLE AUXILIARY SPRING

Speed 1/min : 380
Contr.-rod trav.mm: 3,9...4,1
: (3,8...4,2)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000
C-rod trav.mm : 11,3...11,4
2nd speed 1/min : 1600
C-rod trav.mm : 10,9...11,1
3rd speed 1/min : 2250
C-rod trav.mm : 10,3...10,5

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 1000
Pressure hPa : 930
Contr.-rod trav.mm: 0,1...0,5

Measurement

Speed 1/min : 1000

1st pressure hPa : 840
C-rod trav.mm : 1,1...1,3
2nd pressure hPa : 700
C-rod trav.mm : 2,3...2,7

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1600
Del.quantity cm3/ : 34,0...35,0
1000H.: (33,0...36,5)
Dispersion cm3/ : 2,5
1000H.: (3,0)
Speed 1/min : 2250
Del.quantity cm3/ : 32,0...34,0
1000H.: (31,0...35,0)
Dispersion cm3/ : 2,5
1000H.: (3,0)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 55,0
1000H.: (55,0)
Contr.-rod trav.mm: 20,1

HIGH IDLE

Speed 1/min : 2500
Contr.-rod trav.mm: 7,1...7,5
Del.quantity cm3/ : 16,0...20,0
1000H.: (15,0...21,0)
Dispersion cm3/ : 2,5
1000H.: (3,0)

LOW IDLE

Speed 1/min : 315
Contr.-rod trav.mm: 5,2...5,4
Del.quantity cm3/ : 5,0...6,0
1000H.: (4,5...9,0)
Dispersion cm3/ : 1,0
1000H.: (1,5)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed 1/min : 340
Contr.-rod trav.mm: (12,5...13,9)
Del.quantity cm3/ : -
1000H.: (33,0...41,0)

Electric current A: 1,8

Control lever at full-load stop

Speed 1/min : 2950
Contr.-rod trav.mm: 0,0...1,0
Electric current
short-duration A : 3,0

Starting test

Speed 1/min : 100
Del.quantity cm3/ : -
min. 1000H.: 55,0

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, 17.3...17.7°
(17.2...17.8°) angular displacement of

the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 3,0 W20
 Edition : 03.04.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 076 973
 Injection pump
 Pump designation : PES6M55C320RS165
 EP type number : 0 410 056 990
 Governor
 Governor design. : RSF315/2300M66-2
 Governor no. : 0 420 021 099

Customer-spec. information
 Customer : DB

Engine : OM603-3.0

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values _____

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Contr.-rod trav.mm: 20.00...22.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.00 (1.00)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 11.30...11.40

Del.quantity cm3/ : 3.1...3.2

100H.: (3.0...3.3)

Dispersion cm3/ : 0.2

100H.: (0.3)

2nd speed 1/min: 290.0

Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/ : 0.5...0.6
100H.: (0.5...0.9)

Dispersion cm3/ : 0.1

100H.: (0.15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 31.5...32.5
1000H.: (30.5...33.5)

Dispersion cm3/ : 2.50

1000H.: (3.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...0

3rd c-rod trav.mm : 7,80...8,20

Speed 1/min : 0...2500

4th speed 1/min : 2950

C-rod trav.mm : 0.00...1.00

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 1000

Contr.-rod trav.mm: 0,9...1,0

LOWEST RATED SPEED I

Control-lever

position degrees: 13...17

Setting point w/out aux. spring

Speed 1/min : 290

Contr.-rod trav.mm: 5,5

Testing:

E17

Speed 1/min : 220
C-rod trav.mm min : 7.00
Speed 1/min : 290
C-rod trav.mm : 5.40...5.60
C-rod trav.mm : 1.50
Speed 1/min : 620...720
Speed 1/min : 1000
C-rod trav.mm max : 1.00

SET IDLE AUXILIARY SPRING

Speed 1/min : 360

Contr.-rod trav.mm: 4,20...4,40
: (4,10...4,50)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000

C-rod trav.mm : 11.30...11.40

2nd speed 1/min : 1800

C-rod trav.mm : 10.90...11.10

3rd speed 1/min : 2200

C-rod trav.mm : 10.60...10.80

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 1000

Pressure hPa : 930

Contr.-rod trav.mm: 0.10...0.50

Measurement

Speed 1/min : 1000

1st pressure hPa : 840

C-rod trav.mm : 1.10...1.30

2nd pressure hPa : 700

C-rod trav.mm : 2.30...2.70

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1800

Del.quantity cm3/ : 34.0...35.5

1000H.: (33.0...36.5)

Dispersion cm3/ : 2.50

1000H.: (3.00)

Speed 1/min : 2200

Del.quantity cm3/ : 33.5...35.5

1000H.: (32.5...36.5)

Dispersion cm3/ : 2.50

1000H.: 3.00

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 55.0...0.0

1000H.: (55.0...0.0)

Contr.-rod trav.mm: 20.10...0.00

HIGH IDLE

Speed 1/min : 2500
Contr.-rod trav.mm: 7.80...8.20
Del.quantity cm³/ : 22.0...26.0
1000H.: (21.0...27.0)
Dispersion cm³/ : 2.50
1000H.: (3.00)

LOW IDLE

Speed 1/min : 290
Contr.-rod trav.mm: 5.40...5.60
Del.quantity cm³/ : 5.5...6.5
1000H.: (5.0...9.5)
Dispersion cm³/ : 1.00
1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed 1/min : 315
Contr.-rod trav.mm: (12,6...14,0)
Del.quantity cm³/ : (32,0...40,0)
1000H.: -
Electric current A: 1,8
Control lever at full-load stop
Speed 1/min : 2950
Contr.-rod trav.mm: 0,0...1,0
Electric current
short-duration A : 3,0
Starting test
Speed 1/min : 100
Del.quantity cm³/ : -
min. 1000H.: 55,0

Remarks:

SETTING OF FBG

-Setting and locking of FBG according
to start-of-delivery average of all
cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At n = 290 1/min and p_u = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

ADJUSTING ACTIVE JOLT DAMPING (ARD)

Control lever at full-load stop. With
n = 1000 1/min., I = 2.5 A, control-rod-
travel reduction = 2.25...2.55 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 3,0 W19
Edition : 21.08.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 076 977
Injection pump
Pump designation : PES6M55C32ORS16S
EP type number : 0 410 056 990
Governor
Governor design. : RSF315/2300M60-7
Governor no. : 0 420 021 092

Customer-spec. information
Customer : DB

Engine : OM603-3.0; MJ:88
1st version kW : 75.0

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Contr.-rod trav.mm: 20.00...22.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.00 (1.00)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 12.70...12.80

Del.quantity cm3/ : 3.0...3.1

100H.: (2.9...3.2)

Dispersion cm3/ : 0.2

100H.: (0.3)

2nd speed 1/min: 290.0

Contr.-rod trav. m: 6.9...7.1

Del.quantity cm3/ : 0.5...0.6

100H.: (0.5...0.9)

Dispersion cm3/ : 0.1

100H.: (0.15)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Charge press. hPa : 1100

Del.quantity cm3/ : 30.5...31.5

1000H.: (29.5...32.5)

Dispersion cm3/ : 2.50

1000H.: (3.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 0...50

3rd c-rod trav.mm : 9,20...9,60

Speed 1/min : 0...2500

4th speed 1/min : 2950

C-rod trav.mm : 0.00...1.00

SET IDLE CONTROL-LEVER

POSITION

Speed 1/min : 800

Contr.-rod trav.mm: 1,9...2,0

LOWEST RATED SPEED I

Control-lever

position degrees: 12...16

Setting point w/out aux. spring

Speed 1/min : 290

Contr.-rod trav.mm: 7.0

Testing:

Speed 1/min : 220
C-rod trav.mm min : 7.00
Speed 1/min : 290
C-rod trav.mm : 6.90...7.10
C-rod trav.mm : 2.50
Speed 1/min : 630...730
Speed 1/min : 800
C-rod trav.mm max : 2.00

SET IDLE AUXILIARY SPRING

Speed 1/min : 360
Contr.-rod trav.mm: 5,60...5,80
: (5,50...5,90)

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 800
C-rod trav.mm : 12.70...12.80
2nd speed 1/min : 1600
C-rod trav.mm : 12.00...12.20
3rd speed 1/min : 2200
C-rod trav.mm : 11.40...11.60

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 800
Pressure hPa : 950

Measurement

Speed 1/min : 800

1st pressure hPa : 900
C-rod trav.mm : 0.50...0.70
2nd pressure hPa : 750
C-rod trav.mm : 1.80...2.20

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1100
Speed 1/min : 1600
Del.quantity cm3/ : 31.5...33.0
1000H.: (30.5...34.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)
Charge press. hPa : 1100
Speed 1/min : 2200
Del.quantity cm3/ : 32.0...34.0
1000H.: (31.0...35.0)
Dispersion cm3/ : 2.50
1000H.: 3.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 52.0...0.0
1000H.: (52.0...0.0)
Contr.-rod trav.mm: 20.10...0.00

HIGH IDLE

1st version

Charge press. hPa : 1100
Speed 1/min : 2500
Contr.-rod trav.mm: 9.20...9.60
Del.quantity cm3/ : 22.0...26.0
1000H.: (21.0...27.0)
Dispersion cm3/ : 2.50
1000H.: (3.00)

LOW IDLE

Speed 1/min : 290
Contr.-rod trav.mm: 6.90...7.10
Del.quantity cm3/ : 5.5...6.5
1000H.: (5.0...9.5)
Dispersion cm3/ : 1.00
1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed 1/min : 315
Contr.-rod trav.mm: (13,0...14,4)
Del.quantity cm3/ : (30,0...38,0)
1000H.: -

Electric current A: 1,8

Control lever at full-load stop

Speed 1/min : 2950
Contr.-rod trav.mm: 0,0...1,0
Electric current

short-duration A : 3,0

Starting test

Speed 1/min : 100
Del.quantity cm3/ : -
min. 1000H.: 52,0

Remarks:

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 27
 Edition : 12.06.87
 Superceeded : 30.3.87
 Calibrating oil : ISO-4113
 Combination no. : 0 400 463 153
 Injection pump
 Pump designation : PES3A80D410/3RS1350
 EP type number : 0 410 483 023
 Governor
 Governor design. : RSV325...1250A2C2168
 -3L
 Governor no. : 0 420 232 475

Customer-spec. information
 Customer : KHD

Engine : F3L912

1st version kW : 40.0
 Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 3- 2

SD ang. spacing°CS: 0-120-240
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1250

 Contr.-rod trav.mm: 10.10...10.20

 Del.quantity cm3/ : 5.7...5.8

 100H.: (5.6...6.0)

 Dispersion cm3/ : 0.2

 100H.: (0.3)

2nd speed 1/min: 325.0
 Contr.-rod trav. m: 6.8...7.0
 Del.quantity cm3/ : 1.0...1.6
 100H.: (0.8...1.7)
 Dispersion cm3/ : 0.2
 100H.: (0.3)

SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed 1/min: 800
 Cont.-rod travelmm: 0.30...0.70

Governor-spring reload
 Notch setting x : 3.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1250
 Del.quantity cm3/ : 57.5...58.5
 1000H.: (56.0...60.0)
 Dispersion cm3/ : 2.50
 1000H.: (3.50)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 41...49

Testing:

1st c-rod trav.mm : 9.10
 Speed 1/min : 1290...1300
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 1315...1345
 3rd c-rod trav.mm : 4.00

Speed 1/min : 1330...1360
4th speed 1/min : 1500
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 12...20
Setting point w/out aux. spring
Speed 1/min : 325
Contr.-rod trav.mm: 5.5

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 325
C-rod trav.mm : 5.90...6.10
C-rod trav.mm : 2.00
Speed 1/min : 455...515

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1250
C-rod trav.mm : 10.10...10.20
2nd speed 1/min : 500
C-rod trav.mm : 10.90...11.00
4th speed 1/min : 1025
C-rod trav.mm : 10.50...10.70

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800
Del.quantity cm3/ : 54.0...56.0
1000H.: (52.0...58.0)
Dispersion cm3/ : 2.00
1000H.: (-)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 9.10
Speed 1/min : 1290...1300

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 130.0...140.0
1000H.: (127.0...143.0)
Contr.-rod trav.mm: 19.50...21.00

Remarks:

: TKS2.50

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 25
Edition : 26.06.87
Superceeded : 20.10.86
Calibrating oil : ISO-4113

Combination no. : 0 400 464 132

Injection pump
Pump designation : PES4A80D410/3RS1349
EP type number : 0 410 484 021
Governor
Governor design. : RSV325...1175A8C0657
-3L
Governor no. : 0 420 232 469

Customer-spec. information
Customer : KHD

Engine : F4L912

1st version kW : 51.0
Speed 1/min: 2350

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1175

Contr.-rod trav.mm: 10.10...10.20

Del.quantity cm3/ : 5.7...5.8

100H.: (5.6...6.0)

Dispersion cm3/ : 0.2

100H.: (0.4)

2nd speed 1/min: 325.0
Contr.-rod trav. m: 6.7...6.9
Del.quantity cm3/ : 1.0...1.6
100H.: (0.8...1.7)
Dispersion cm3/ : 0.2
100H.: (0.3)

SLEEVE POSITION

Control-lever position
Degree: -3
Speed 1/min: 800
Contr.-rod travelmm: 0.30...0.70

Governor-spring reload
Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1175
Del.quantity cm3/ : 57.5...58.5
1000H.: (56.0...60.0)
Dispersion cm3/ : 2.50
1000H.: (4.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 52...60

Testing:
1st c-rod trav.mm : 9.10
Speed 1/min : 1215...1225
2nd c-rod trav.mm : 4.00
Speed 1/min : 1245...1275
3rd c-rod trav.mm : 4.00
Speed 1/min : 1250...1280
4th speed 1/min : 1420

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever

position degrees: 16...24

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 5.5

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 5.90...6.10

C-rod trav.mm : 2.00

Speed 1/min : 450...510

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1175

C-rod trav.mm : 10.10...10.20

2nd speed 1/min : 500

C-rod trav.mm : 11.00...11.10

4th speed 1/min : 900

C-rod trav.mm : 10.50...10.70

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800

Del.quantity cm3/ : 54.5...56.5

1000H.: (52.5...58.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.10

Speed 1/min : 1215...1225

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 135.0...145.0

1000H.: (132.0...148.0)

Contr.-rod trav.mm: 19.50...21.00

Remarks:

: Dx3.70

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 28
 Edition : 26.06.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 464 133
 Injection pump
 Pump designation : PES4A80D410/3RS1349
 EP type number : 0 410 484 021
 Governor
 Governor design. : RSV325...1175A8C2163
 -4L
 Governor no. : 0 420 232 476

Customer-spec. information
 Customer : KHD

Engine : F4L912

1st version kW : 51.0
 Speed 1/min: 2350

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1175

Contr.-rod trav.mm: 10.10...10.20

Del.quantity cm3/ : 5.7...5.8

100H.: (5.6...6.0)

Dispersion cm3/ : 0.2

100H.: (0.4)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 6.7...6.9

Del.quantity cm3/ : 1.0...1.6

100H.: (0.8...1.7)

Dispersion cm3/ : 0.2

100H.: (0.3)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1175

Del.quantity cm3/ : 57.5...58.5

1000H.: (56.0...60.0)

Dispersion cm3/ : 2.50

1000H.: (4.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 52...60

Testing:

1st c-rod trav.mm : 9.10

Speed 1/min : 1215...1225

2nd c-rod trav.mm : 4.00

Speed 1/min : 1245...1275

3rd c-rod trav.mm : 4.00

Speed 1/min : 1250...1280

4th speed 1/min : 1420

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever

position degrees: 16...24

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 5.5

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 5.90...6.10

C-rod trav.mm : 2.00

Speed 1/min : 450...510

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1175

C-rod trav.mm : 10.10...10.20

2nd speed 1/min : 500

C-rod trav.mm : 11.00...11.10

4th speed 1/min : 900

C-rod trav.mm : 10.50...10.70

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800

Del.quantity cm3/ : 55.0...57.0

1000H.: (53.0...59.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.10

Speed 1/min : 1215...1225

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 135.0...145.0

1000H.: (132.0...148.0)

Contr.-rod trav.mm: 19.50...21.00

Remarks:

: TKS2.70

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 19.0 K1
Edition : 28.08.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 640 104
Injection pump
Pump designation : PE12A9SD610LS2453
EP type number : 0 410 690 998
Governor
Governor design. : RQV300...1250AB1083L
Governor no. : 0 420 212 111

Customer-spec. information
Customer : KHD

Engine : F12L413F

1st version kW : 261.0
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 4- 9- 8- 5- 2-
11- 10- 3- 6- 7- 12

SD ang. spacing°CS: 0-15-60-75-120-135-
180-195-240-255-300-
315

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 10.00...10.10

Del.quantity cm3/ : 8.7...8.9

100H.: (8.5...9.1)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 7.0...7.2

Del.quantity cm3/ : 1.7...2.2

100H.: (1.4...2.4)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1250

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Del.quantity cm3/ : 87.0...89.0

1000H.: (85.0...91.0)

Dispersion cm3/ : 3.00

1000H.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 59...67

Testing:

1st c-rod trav.mm : 9.00

Speed 1/min : 1290...1300

2nd c-rod trav.mm : 4.00

Speed 1/min : 1350...1380

4th speed 1/min : 1500

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I
Control-lever
position degrees: 7...15

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.50
Speed 1/min : 300
C-rod trav.mm : 5.90...6.10
C-rod trav.mm : 2.00
Speed 1/min : 585...615

CONSTANT REGULATION

Speed 1/min : 330...400

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1250
C-rod trav.mm : 10.00...10.10
2nd speed 1/min : 800
C-rod trav.mm : 10.40...10.50
3rd speed 1/min : 1025
C-rod trav.mm : 10.20...10.40

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800
Del.quantity cm3/ : 88.5...91.5
1000H.: (86.0...94.0)
Speed 1/min : 1000
Del.quantity cm3/ : 85.5...88.5
1000H.: (83.0...91.0)

SETTING CONTROL-ROD STOP

Speed 1/min : 600

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 9.00
Speed 1/min : 1290...1300

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 14.30...15.30

LOW IDLE

Speed 1/min : 300

F01

Contr.-rod trav.mm: 7.00...7.20
Del.quantity cm3/ : 17.0...22.0
1000H.: (14.5...24.5)
Dispersion cm3/ : 3.00
1000H.: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 I 2
Edition : 24.07.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113

Combination no. : 0 400 646 275

Injection pump
Pump designation : PE6A9SD410LS2621
EP type number : 0 410 696 982
Governor
Governor design. : RQ300/1250AB1148-1L
Governor no. : 0 420 200 104

Customer-spec. information
Customer : KHD

Engine : F6L413F

1st version kW : 141.0
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 6- 5- 4- 3- 2

SD ang. spacing^oCS: 0-75-120-195-240-315
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 10.40...10.50

Del.quantity cm3/ : 9.2...9.4

100H.: (9.0...9.6)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 6.4...6.6

Del.quantity cm3/ : 0.8...1.4

100H.: (0.5...1.6)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Del.quantity cm3/ : 92.0...94.0

1000H.: (90.0...96.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 9.40

Speed 1/min : 1295...1310

2nd c-rod trav.mm : 4.00

Speed 1/min : 1325...1355

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 6.5

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.90

Speed 1/min : 300

C-rod trav.mm : 6.40...6.60

C-rod trav.mm : 2.00

Speed 1/min : 340...380

TORQUE CONTROL

Dimension a mm : 0.17

Torque-control curve - 1st version

1st speed 1/min : 1250

C-rod trav.mm : 10.40...10.50

2nd speed 1/min : 600

C-rod trav.mm : 10.90...11.00

3rd speed 1/min : 915

C-rod trav.mm : 10.70...10.90

4th speed 1/min : 980

C-rod trav.mm : 10.40...10.60

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 650

Del.quantity cm3/ : 91.5...94.5

1000H.: (89.0...97.0)

SETTING CONTROL-ROD STOP

Speed 1/min : 650

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.40

Speed 1/min : 1295...1310

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 120.0...130.0

1000H.: (117.0...133.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HAN 10,8 J
 Edition : 28.08.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 676 188
 Injection pump
 Pump designation : PE6A95D32ORS2557
 EP type number : 0 410 696 986
 Governor
 Governor design. : RSV350...1075A8C2226
 R
 Governor no. : 0 420 233 210

Customer-spec. information
 Customer : HANOMAG

Engine : D964 E

1st version kW : 106.0
 Speed 1/min: 2150

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1075

Contr.-rod trav.mm: 9.70...9.80

Del.quantity cm3/ : 7.9...8.1

100H.: (7.7...8.3)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.6...6.8

Del.quantity cm3/ : 0.9...1.5

100H.: (0.6...1.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 5.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1075

Del.quantity cm3/ : 79.5...81.5

1000H.: (77.5...83.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...58

Testing:

1st c-rod trav.mm : 8.70

Speed 1/min : 1115...1125

2nd c-rod trav.mm : 4.00

Speed 1/min : 1145...1175

3rd c-rod trav.mm : 4.00

Speed 1/min : 1160...1190
4th speed 1/min : 1325
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 20...28
Setting point w/out aux. spring
Speed 1/min : 350
Contr.-rod trav.mm: 5.5

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 350
C-rod trav.mm : 5.90...6.10
C-rod trav.mm : 2.00
Speed 1/min : 490...550

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1075
C-rod trav.mm : 9.70...9.80
2nd speed 1/min : 500
C-rod trav.mm : 10.80...10.90
4th speed 1/min : 855
C-rod trav.mm : 10.20...10.40

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500
Del.quantity cm3/ : 79.0...82.0
1000H.: (76.5...84.5)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 8.70
Speed 1/min : 1115...1125

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 19.50...21.00

Remarks:
APPLICATION
Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 4.0 A
Edition : 24.07.87
Superceeded : 9.3.87
Calibrating oil : ISO-4113

Combination no. : 0 400 844 083

Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 894 029
Governor
Governor design. : RQV300...1400AB1065-SL
Governor no. : 0 420 212 169

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1400

Contr.-rod trav.mm: 10.90...11.00

Del.quantity cm3/ : 6.3...6.4

100H.: (6.1...6.6)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 300.0
Contr.-rod trav. m: 8.6...8.8
Del.quantity cm3/ : 0.8...1.2
100H.: (0.6...1.4)
Dispersion cm3/ : 0.2
100H.: (0.4)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300
Sleeve travel mm: 0.80...1.30
2nd speed 1/min: 500
Sleeve travel mm: 2.30...2.80
3rd speed 1/min: 750
Sleeve travel mm: 4.10...4.30
4th speed 1/min: 1500
Sleeve travel mm: 8.50...8.60

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1500
Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1400
Del.quantity cm3/ : 63.0...64.0
1000H.: (61.0...66.0)
Dispersion cm3/ : 3.00
1000H.: (5.00)

HIGHEST RATED SPEED

1st version

Control-lever
position degrees: 58...66

Testing:

1st c-rod trav.mm : 9.90
Speed 1/min : 1450...1460
2nd c-rod trav.mm : 4.00
Speed 1/min : 1560...1590
4th speed 1/min : 1630
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 20...28

Testing:

Speed 1/min : 100
C-rod trav.mm min : 10.20
Speed 1/min : 300
C-rod trav.mm : 8.60...8.80
C-rod trav.mm : 2.00

CONSTANT REGULATION

Speed 1/min : 540...680

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1400
C-rod trav.mm : 10.90...11.00
2nd speed 1/min : 630
C-rod trav.mm : 12.20...12.30
3rd speed 1/min : 900
C-rod trav.mm : 11.50...11.70

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 630
Del.quantity cm3/ : 55.5...58.5
1000H.: (53.0...61.0)
Speed 1/min : 900
Del.quantity cm3/ : 54.5...57.5
1000H.: (52.0...60.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.90
Speed 1/min : 1450...1460

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 17.00...17.40

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LIE S,6 B
Edition : 28.08.87
Superceeded : 13.5.87
Calibrating oil : ISO-4113

Combination no. : 0 400 844 085

Injection pump
Pump designation : PES4A100D41ORS2686
EP type number : 0 410 804 001
Governor
Governor design. : RQV400...1000AB1203L
Governor no. : 0 420 212 177

Customer-spec. information
Customer : LIEBHERR

Engine : D904T

1st version kW : 100.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)
Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 12.50...12.60

Del.quantity cm3/ : 12.1...12.3
100H.: (11.9...12.5)

Dispersion cm3/ : 0.3
100H.: (0.6)

2nd speed 1/min: 400.0
Contr.-rod trav. m: 7.4...7.6
Del.quantity cm3/ : 1.5...2.1
100H.: (1.2...2.3)
Dispersion cm3/ : 0.3
100H.: (0.5)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 435
Sleeve travel mm: 2.10...2.30
2nd speed 1/min: 500
Sleeve travel mm: 3.00...3.40
3rd speed 1/min: 1040
Sleeve travel mm: 8.10...8.20
4th speed 1/min: 1135
Sleeve travel mm: 9.20...9.70

SLEEVE POSITION

Control-lever position
Degree: 1
Speed 1/min: 1000
Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1000
Charge press. hPa : 800
Del.quantity cm3/ : 121.5...123.5
1000H.: (119.5...125.5)

Dispersion cm³/ : 3.50
1000H.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 58...66

Testing:

1st c-rod trav.mm : 11.50

Speed 1/min : 1040...1050

2nd c-rod trav.mm : 4.00

Speed 1/min : 1125...1155

4th speed 1/min : 1250

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 9...17

Testing:

Speed 1/min : 100

C-rod trav.mm min : 9.00

Speed 1/min : 400

C-rod trav.mm : 7.40...7.60

CONSTANT REGULATION

Speed 1/min : 425...530

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000

C-rod trav.mm : 12.50...12.60

2nd speed 1/min : 500

C-rod trav.mm : 13.80...13.90

4th speed 1/min : 860

C-rod trav.mm : 13.30...13.50

5th speed 1/min : 920

C-rod trav.mm : 12.90...13.10

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 800

Contr.-rod trav.mm: 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 12.70...12.80

2nd pressure hPa : 655

C-rod trav.mm : 13.60...13.70

3rd pressure hPa : 610

C-rod trav.mm : 13.00...13.20

SWITCH-OVER POINT

F10

Speed 1/min : 320 (340)

FUEL-DELIVERY CHARACTERISTICS

Charge press. hPa : 800

Speed 1/min : 650

Del.quantity cm³/ : 133.5...136.5

1000H.: (131.0...139.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm³/ : 104.0...107.0

1000H.: (102.0...109.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.50

Speed 1/min : 1040...1050

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm³/ : 113.0...123.0

1000H.: (110.0...126.0)

Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 400

Contr.-rod trav.mm: 7.40...7.60

Del.quantity cm³/ : 15.0...21.0

1000H.: (12.5...23.5)

Dispersion cm³/ : 3.50

1000H.: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 I 5
Edition : 26.06.87
Superceeded : 10.84
Calibrating oil : ISO-4113

Combination no. : 0 400 846 242

Injection pump
Pump designation : PES6A80D41ORS2085Y
EP type number : 0 410 886 044
Governor
Governor design. : RQV300...1475AB622DL
Governor no. : 0 420 214 097

Customer-spec. information
Customer : DAIMLER-BENZ
Speed 1/min: 2950

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1450

Contr.-rod trav.mm: 8.20...8.30

Del.quantity cm3/ : 4.6...4.7

100H.: (4.4...4.8)

Dispersion cm3/ : 0.2

100H.: (0.3)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 6.5...6.7

Del.quantity cm3/ : 1.2...1.6

100H.: (1.0...1.7)

Dispersion cm3/ : 0.2

100H.: (0.3)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 1460

Sleeve travel mm: 8.40...8.60

2nd speed 1/min: 950

Sleeve travel mm: 5.20...5.50

3rd speed 1/min: 775

Sleeve travel mm: 4.10...4.60

4th speed 1/min: 550

Sleeve travel mm: 2.70...3.00

5th speed 1/min: 300

Sleeve travel mm: 0.70...1.20

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1420

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1450

Del.quantity cm3/ : 46.0...47.0

1000H.: (44.5...48.5)

Dispersion cm3/ : 2.00

1000H.: (3.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 7.20

Speed 1/min : 1505...1515

2nd c-rod trav.mm : 4.00

Speed 1/min : 1560...1590

4th speed 1/min : 1700

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 10...18

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.10

Speed 1/min : 300

C-rod trav.mm : 6.50...6.70

CONSTANT REGULATION

Speed 1/min : 380...500

TORQUE CONTROL

Dimension a mm : 1.00

Torque-control curve - 1st version

1st speed 1/min : 1450

C-rod trav.mm : 8.20...8.30

2nd speed 1/min : 500

C-rod trav.mm : 9.20...9.30

3rd speed 1/min : 800

C-rod trav.mm : 8.90...9.10

4th speed 1/min : 1000

C-rod trav.mm : 8.60...8.90

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 41.0...44.0

1000H.: (39.0...46.0)

Speed 1/min : 800

Del.quantity cm3/ : 45.5...47.5

1000H.: (44.0...49.0)

Speed 1/min : 1000

Del.quantity cm3/ : 46.0...48.0

1000H.: (44.0...50.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 7.20

Speed 1/min : 1505...1515

MIDDLE RATED SPEED

Contr.-rod trav.mm: 7.20

Speed 1/min : 1320...1330

Contr.-rod trav.mm: 4.00

Speed 1/min : 1360...1390

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 13.70...14.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,0 C 1
Edition : 28.08.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 400 846 264

Injection pump
Pump designation : PES6A85D320RS2337
EP type number : 0 410 886 921
Governor
Governor design. : RQ200/1250AB801DR
Governor no. : 0 420 203 089

Customer-spec. information
Customer : MAN

Engine : D0846HM42U

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 10.70...10.80

Del.quantity cm3/ : 7.0...7.1

100H.: (6.8...7.3)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 200.0

Contr.-rod trav. m: 8.4...8.6

Del.quantity cm3/ : 1.8...2.4

100H.: (1.6...2.6)

Dispersion cm3/ : -

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 550

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Del.quantity cm3/ : 70.0...71.0

1000H.: (68.0...73.0)

Dispersion cm3/ : 3.00

1000H.: (4.50)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 550

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 9.75

Speed 1/min : 1295...1310

2nd c-rod trav.mm : 4.00

Speed 1/min : 1335...1365

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 200

Contr.-rod trav.mm: 8.5

Testing:

F15

Speed 1/min : 100
C-rod trav.mm min : 9.90
Speed 1/min : 200
C-rod trav.mm : 8.40...8.60
C-rod trav.mm : 2.00
Speed 1/min : 340...380

TORQUE CONTROL

Dimension a mm : 0.30

Torque-control curve - 1st version

1st speed 1/min : 1250

C-rod trav.mm : 10.70...10.80

2nd speed 1/min : 500

C-rod trav.mm : 11.40...11.50

4th speed 1/min : 1000

C-rod trav.mm : 11.10...11.30

5th speed 1/min : 1125

C-rod trav.mm : 10.80...11.00

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 0.0...69.5

1000H.: (0.0...72.0)

Speed 1/min : 800

Del.quantity cm3/ : 69.0...72.0

1000H.: (66.5...74.5)

SETTING CONTROL-ROD STOP

Speed 1/min : 200

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.75

Speed 1/min : 1295...1310

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 123.0...133.0

1000H.: (120.0...136.0)

Contr.-rod trav.mm: 18.10...18.50

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 A
Edition : 24.07.87
Superceeded : 9.3.87
Calibrating oil : ISO-4113

Combination no. : 0 400 846 522

Injection pump
Pump designation : PES6A90D41ORS2667
EP type number : 0 410 896 080
Governor
Governor design. : RQV300...1400AB1065-4L
Governor no. : 0 420 212 168

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1400

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 6.3...6.4

100H.: (6.1...6.6)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 8.9...9.1

Del.quantity cm3/ : 0.9...1.3

100H.: (0.7...1.5)

Dispersion cm3/ : 0.2

100H.: (0.4)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 0.80...1.30

2nd speed 1/min: 500

Sleeve travel mm: 2.30...2.80

3rd speed 1/min: 750

Sleeve travel mm: 4.10...4.30

4th speed 1/min: 1500

Sleeve travel mm: 8.50...8.60

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1500

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1400

Del.quantity cm3/ : 63.5...64.5

1000H.: (61.5...66.5)

Dispersion cm3/ : 3.00

1000H.: (4.50)

HIGHEST RATED SPEED

1st version

Control-lever
position degrees: 61...69

Testing:

1st c-rod trav.mm : 10.10
Speed 1/min : 1460...1470
2nd c-rod trav.mm : 4.00
Speed 1/min : 1560...1590
4th speed 1/min : 1630
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 21...29

Testing:

Speed 1/min : 100
C-rod trav.mm min : 10.30
Speed 1/min : 300
C-rod trav.mm : 8.90...9.10

CONSTANT REGULATION

Speed 1/min : 540...680

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1400
C-rod trav.mm : 11.10...12.20
2nd speed 1/min : 500
C-rod trav.mm : 12.30...12.40
3rd speed 1/min : 900
C-rod trav.mm : 11.90...12.10
4th speed 1/min : 1100
C-rod trav.mm : 11.40...11.70

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500
Del.quantity cm3/ : 52.0...54.0
1000H.: (49.5...56.5)
Speed 1/min : 900
Del.quantity cm3/ : 55.0...58.0
1000H.: (52.5...60.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.10
Speed 1/min : 1460...1470

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 17.00...17.40
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VAU 5,4 A 1
 Edition : 24.07.87
 Superceeded : 1.86
 Calibrating oil : ISO-4113
 Combination no. : 0 400 846 533
 Injection pump
 Pump designation : PES6A9SD32ORS2646
 EP type number : 0 410 896 923
 Governor
 Governor design. : RQV300...1300AB1163-1R
 Governor no. : 0 420 213 104

Customer-spec. information
 Customer : VAUXHALL

Engine : 330T/C

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 10.00...11.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed 1/mi: 810

 Contr.-rod trav.mm: 9.70...9.80

 Del.quantity cm3/ : 6.3...6.5

 100H.: (6.1...6.7)

 Dispersion cm3/ : 0.3

 100H.: (0.6)

 2nd speed 1/min: 300.0
 Contr.-rod trav. m: 5.9...6.1
 Del.quantity cm3/ : 0.8...1.4
 100H.: (0.5...1.6)
 Dispersion cm3/ : 0.3
 100H.: (0.5)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 275
 Sleeve travel mm: 0.90...1.10
 2nd speed 1/min: 500
 Sleeve travel mm: 3.10...3.50
 3rd speed 1/min: 1000
 Sleeve travel mm: 5.70...5.80
 4th speed 1/min: 1300
 Sleeve travel mm: 7.90...8.10

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1400
 Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 810
 Del.quantity cm3/ : 63.5...65.5
 1000H.: (61.5...67.5)
 Dispersion cm3/ : 3.50
 1000H.: (6.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 57...65

Testing:
1st c-rod trav.mm : 8.70
Speed 1/min : 1350...1360
2nd c-rod trav.mm : 4.00
Speed 1/min : 1455...1485
4th speed 1/min : 1600
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I
Control-lever
position degrees: 13...21

Testing:
Speed 1/min : 100
C-rod trav.mm min : 7.40
Speed 1/min : 300
C-rod trav.mm : 5.90...6.10

CONSTANT REGULATION
Speed 1/min : 350...490

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 1200
Del.quantity cm3/ : 71.5...74.5
1000H.: (69.5...76.5)
Speed 1/min : 500
Del.quantity cm3/ : 52.0...55.0
1000H.: (50.0...57.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 8.70
Speed 1/min : 1350...1360

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 97.0...107.0
1000H.: (94.0...110.0)
Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 5.90...6.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,9 A
 Edition : 10.08.87
 Superceeded : 12.9.86
 Calibrating oil : ISO-4113
 Combination no. : 0 400 846 547
 Injection pump
 Pump designation : PES6A90D410RS2713
 EP type number : 0 410 896 083
 Governor
 Governor design. : RQV300...1350AB1175-
 1L
 Governor no. : 0 420 212 183

Customer-spec. information
 Customer : FIAT

Engine : 8060.25.661

1st version kW : 88.0
 Speed 1/min: 2700

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1350

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 6.8...6.9

100H.: (6.6...7.1)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 9.7...9.9

Del.quantity cm3/ : 1.2...1.8

100H.: (1.0...2.0)

Dispersion cm3/ : 0.2

100H.: (0.4)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 0.90...1.10

2nd speed 1/min: 435

Sleeve travel mm: 2.40...2.60

3rd speed 1/min: 780

Sleeve travel mm: 4.20...4.40

4th speed 1/min: 1400

Sleeve travel mm: 8.10...8.20

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1430

Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1350

Charge press. hPa : 700

Del.quantity cm3/ : 68.0...69.0

1000H.: (66.0...71.0)

Dispersion cm3/ : 3.00

1000H.: (5.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 55...63

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1390...1400

2nd c-rod trav.mm : 4.00

Speed 1/min : 1515...1545

4th speed 1/min : 1650

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 14...21

Testing:

Speed 1/min : 100

C-rod trav.mm min : 11.20

Speed 1/min : 300

C-rod trav.mm : 9.70...9.90

CONSTANT REGULATION

Speed 1/min : 350...450

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1350

C-rod trav.mm : 11.70...11.80

2nd speed 1/min : 500

C-rod trav.mm : 11.70...11.90

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 11.40...11.50

2nd pressure hPa : 260

C-rod trav.mm : 11.60...11.70

FUEL-DELIVERY CHARACTERISTICS

Charge press. hPa : 700

Speed 1/min : 800

Del.quantity cm3/ : 57.5...59.5

1000H.: (55.0...62.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 46.5...48.5

1000H.: (44.5...50.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.70

Speed 1/min : 1390...1400

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 100.0...110.0

1000H.: (97.0...113.0)

Contr.-rod trav.mm: 17.10...17.50

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,9 B 1
Edition : 12.06.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113
Combination no. : 0 400 846 552
Injection pump
Pump designation : PES6A90D410RS2723
EP type number : 0 410 896 085
Governor
Governor design. : RQV300...1500AB1152-2L
Governor no. : 0 420 212 196

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8060.05.662

1st version kW : 88.0
Speed 1/min: 3000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle*holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
(2.15...2.35)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1500

Contr.-rod trav.mm: 10.00...10.10

Del.quantity cm3/ : 5.7...5.8

100H.: (5.5...6.0)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 8.8...9.0

Del.quantity cm3/ : 1.0...1.6

100H.: (0.8...1.8)

Dispersion cm3/ : 0.2

100H.: (0.4)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 345

Sleeve travel mm: 2.20...2.40

2nd speed 1/min: 410

Sleeve travel mm: 2.80...3.20

3rd speed 1/min: 630

Sleeve travel mm: 4.30...4.70

4th speed 1/min: 1545

Sleeve travel mm: 8.60...8.70

5th speed 1/min: 1650

Sleeve travel mm: 9.30...9.50

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1525

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1500

Del.quantity cm3/ : 57.5...58.5

1000H.: (55.5...60.5)

Dispersion cm3/ : 3.00

1000H.: (4.50)

quantity (EES) with 12 volts

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 9.00

Speed 1/min : 1540...1550

2nd c-rod trav.mm : 4.00

Speed 1/min : 1655...1685

LOWEST RATED SPEED I

Control-lever

position degrees: 14...22

Testing:

Speed 1/min : 100

C-rod trav.mm min : 10.30

Speed 1/min : 300

C-rod trav.mm : 8.80...9.00

CONSTANT REGULATION

Speed 1/min : 330...430

TORQUE CONTROL

Dimension a mm : 0.90

Torque-control curve - 1st version

1st speed 1/min : 1500

C-rod trav.mm : 10.00...10.10

2nd speed 1/min : 500

C-rod trav.mm : 10.90...11.00

3rd speed 1/min : 725

C-rod trav.mm : 10.60...10.80

4th speed 1/min : 1175

C-rod trav.mm : 10.00...10.20

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm³/ : 48.0...50.0

1000H.: (45.5...52.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.00

Speed 1/min : 1540...1550

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm³/ : 95.0...105.0

1000H.: (92.0...108.0)

Contr.-rod trav.mm: 16.00...16.40

Remarks:

Test electrically-released starting

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 30
Edition : 31.07.87
Superceeded : 9.3.87
Calibrating oil : ISO-4113

Combination no. : 0 400 863 012

Injection pump
Pump designation : PES3A85D410/3RS2731
EP type number : 0 410 883 988
Governor
Governor design. : RSV325...1250A2C2168
-3L
Governor no. : 0 420 232 475

Customer-spec. information
Customer : KHD

Engine : F3L913

1st version kW : 44.0
Speed 1/min: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 2

SD ang. spacing^oCS: 0-120-240
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 9.90...10.00

Del.quantity cm3/ : 6.8...6.9

100H.: (6.6...7.1)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 325.0
Contr.-rod trav. m: 6.2...6.4
Del.quantity cm3/ : 1.0...1.6
100H.: (0.8...1.8)
Dispersion cm3/ : 0.2
100H.: (0.4)

SLEEVE POSITION

Control-lever position
Degree: -3
Speed 1/min: 800
Contr.-rod travelmm: 0.30...0.70

Governor-spring reload
Notch setting x : 4.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1250
Del.quantity cm3/ : 68.5...69.5
1000H.: (66.5...71.5)
Dispersion cm3/ : 3.00
1000H.: (5.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 41...49

Testing:
1st c-rod trav.mm : 8.90
Speed 1/min : 1290...1300
2nd c-rod trav.mm : 4.00
Speed 1/min : 1315...1345
3rd c-rod trav.mm : 4.00
Speed 1/min : 1330...1360
4th speed 1/min : 1500

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 12...20
Setting point w/out aux. spring
Speed 1/min : 325
Contr.-rod trav.mm: 5.8

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 325
C-rod trav.mm : 6.20...6.40
C-rod trav.mm : 2.00
Speed 1/min : 460...520

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1250
C-rod trav.mm : 9.90...10.00
2nd speed 1/min : 500
C-rod trav.mm : 10.20...10.30
4th speed 1/min : 960
C-rod trav.mm : 9.90...10.10

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800
Del.quantity cm3/ : 58.0...60.0
1000H.: (55.5...62.5)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 8.90
Speed 1/min : 1290...1300

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 115.0...125.0
1000H.: (112.0...128.0)
Contr.-rod trav.mm: 17.00...17.20

Remarks:

: TKS2.60

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 4,1 D
Edition : 10.08.87
Superceeded : 13.5.87
Calibrating oil : ISO-4113

Combination no. : 0 400 864 063

Injection pump
Pump designation : PES4A85D410/3RS2638
EP type number : 0 410 884 950
Governor
Governor design. : RSV325...1400A8C707-3L
Governor no. : 0 420 232 440

Customer-spec. information
Customer : KHD

Engine : BF4L913

1st version kW : 78.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 12.70...12.80

Del.quantity cm3/ : 8.2...8.3

100H.: (8.0...8.5)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 8.4...8.6

Del.quantity cm3/ : 0.8...1.4

100H.: (0.6...1.6)

Dispersion cm3/ : 0.2

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload
Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Charge press. hPa : 700

Del.quantity cm3/ : 82.5...83.5

1000H.: (80.5...85.5)

Dispersion cm3/ : 3.00

1000H.: (4.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 49...57

Testing:

1st c-rod trav.mm : 11.70

Speed 1/min : 1290...1300

2nd c-rod trav.mm : 4.00

Speed 1/min : 1315...1345

3rd c-rod trav.mm : 4.00

Speed 1/min : 1360...1390

4th speed 1/min : 1540
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 9...17
Setting point w/out aux. spring
Speed 1/min : 325
Contr.-rod trav.mm: 8.0
Speed 1/min : 325
C-rod trav.mm : 8.40...8.60
C-rod trav.mm : 2.00
Speed 1/min : 620...680

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1250
C-rod trav.mm : 12.70...12.80
2nd speed 1/min : 500
C-rod trav.mm : 13.70...13.80
3rd speed 1/min : 850
C-rod trav.mm : 13.50...13.60
4th speed 1/min : 950
C-rod trav.mm : 13.20...13.40

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 700
Contr.-rod trav.mm: 13.70...13.80

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 12.50...12.60
2nd pressure hPa : 390
C-rod trav.mm : 13.50...13.60
3rd pressure hPa : 250
C-rod trav.mm : 12.80...13.00

FUEL-DELIVERY CHARACTERISTICS

Charge press. hPa : 700
Speed 1/min : 850
Del.quantity cm3/ : 84.5...86.5
1000H.: (82.0...89.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 59.5...61.5
1000H.: (57.5...63.5)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 11.70

Speed 1/min : 1290...1300

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 95.0...105.0
1000H.: (92.0...108.0)
Contr.-rod trav.mm: 17.10...17.30

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 4,1 G
Edition : 12.06.87
Superceeded : 23.9.86
Calibrating oil : ISO-4113
Combination no. : 0 400 864 066
Injection pump
Pump designation : PES4AB0D410/3RS2717
EP type number : 0 410 884 045
Governor
Governor design. : RSV325...900A1C602-2
L
Governor no. : 0 420 232 448

Customer-spec. information
Customer : KHD

Engine : F4L913

1st version kW : 43.0
Speed 1/min: 1800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20
: (2.05...2.25)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 880

Contr.-rod trav.mm: 10.20...10.30

Del.quantity cm3/ : 4.9...5.0

100H.: (4.8...5.2)

Dispersion cm3/ : 0.2

100H.: (0.4)

2nd speed 1/min: 325.0
Contr.-rod trav. m: 7.8...8.0
Del.quantity cm3/ : 1.0...1.6
100H.: (0.8...1.7)
Dispersion cm3/ : 0.2
100H.: (0.3)

SLEEVE POSITION

Control-lever position
Degree: -3
Speed 1/min: 800
Cont.-rod travelmm: 0.30...0.70

Governor-spring reload
Notch setting x : 4.25

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 880
Del.quantity cm3/ : 49.5...50.5
1000H.: (48.0...52.0)
Dispersion cm3/ : 2.50
1000H.: (4.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 44...52

Testing:
1st c-rod trav.mm : 9.20
Speed 1/min : 920...930
2nd c-rod trav.mm : 4.00
Speed 1/min : 945...975
4th speed 1/min : 1110
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever

position degrees: 21...29

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 7.9

Speed 1/min : 325

C-rod trav.mm : 7.80...8.00

C-rod trav.mm : 2.00

Speed 1/min : 350...410

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.20

Speed 1/min : 920...930

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 125.0...135.0

1000H.: (122.0...138.0)

Contr.-rod trav.mm: 19.50...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 4,1 C
Edition : 31.07.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 864 071
Injection pump
Pump designation : PES4A90D320/3RS2743
EP type number : 0 410 894 034
Governor
Governor design. : RSV325...1500A2C505-
2R
Governor no. : 0 420 233 196

Customer-spec. information
Customer : MWM

Engine : TD226B-4

1st version kW : 65.0
Speed 1/min: 3000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
(2.90...3.10)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...0.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed 1/mi: 1075

Contr.-rod trav.mm: 9.80...9.90

Del.quantity cm3/ : 7.4...7.5

100H.: (7.2...7.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 6.7...6.9

Del.quantity cm3/ : 0.9...1.5

100H.: (0.7...1.7)

Dispersion cm3/ : 0.2

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 3.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1075

Del.quantity cm3/ : 74.5...75.5

1000H.: (72.5...77.5)

Dispersion cm3/ : 3.00

1000H.: (5.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 42...50

Testing:

1st c-rod trav.mm : 8.80

Speed 1/min : 1115...1125

2nd c-rod trav.mm : 4.00
Speed 1/min : 1155...1185
3rd c-rod trav.mm : 4.00
Speed 1/min : 1170...1200
4th speed 1/min : 1330
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 18...26
Setting point w/out aux. spring
Speed 1/min : 325
Contr.-rod trav.mm: 6.3

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 325
C-rod trav.mm : 6.70...6.90
C-rod trav.mm : 2.00
Speed 1/min : 420...480

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1075
C-rod trav.mm : 9.80...9.90
2nd speed 1/min : 500
C-rod trav.mm : 9.80...10.00

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 8.80
Speed 1/min : 1115...1125

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 132.0...142.0
1000H.: (129.0...145.0)
Contr.-rod trav.mm: 19.50...21.00

Remarks:
APPLICATION
Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LIE 5,6 A
Edition : 28.08.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump
Pump designation : PES4A95D41ORS2685
EP type number : 0 410 894 996
Governor
Governor design. : RSV400...1000A1C2187
Governor no. : 0 420 232 387

Customer-spec. information
Customer : LIEBHERR

Engine : D904 NA

1st version kW : 70.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 8.50...9.50
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 10.20...10.30

Del.quantity cm3/ : 8.6...8.8

100H.: (8.4...9.0)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 400.0

Contr.-rod trav. m: 6.1...6.3

Del.quantity cm3/ : 1.0...1.6

100H.: (0.7...1.8)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 3.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 86.0...88.0

1000H.: (84.0...90.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 45...53

Testing:

1st c-rod trav.mm : 9.20

Speed 1/min : 1040...1050

2nd c-rod trav.mm : 4.00
Speed 1/min : 1050...1080
3rd c-rod trav.mm : 4.00
Speed 1/min : 1085...1115
4th speed 1/min : 1230
C-rod trav.mm : 0.30...1.40

Dispersion cm3/ : 3.50
1000H.: (5.50)

Remarks:

LOWEST RATED SPEED I

Control-lever
position degrees: 17...26
Setting point w/out aux. spring
Speed 1/min : 400
Contr.-rod trav.mm: 5.7

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 400
C-rod trav.mm : 6.10...6.30
C-rod trav.mm : 2.00
Speed 1/min : 515...575

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1000
C-rod trav.mm : 10.20...10.30
2nd speed 1/min : 500
C-rod trav.mm : 10.20...10.40

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 80.5...83.5
1000H.: (78.0...86.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 9.20
Speed 1/min : 1040...1050

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 400
Contr.-rod trav.mm: 6.10...6.30
Del.quantity cm3/ : 10.0...16.0
1000H.: (7.5...18.5)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 4,0 B
Edition : 21.08.87
Superceeded : 22.10.86
Calibrating oil : ISO-4113

Combination no. : 0 400 874 240

Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 894 029
Governor
Governor design. : RSV350...1400AOC2006
-1L
Governor no. : 0 420 232 449

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing^oCS: 0-90-180-270
Tolerance + - ^o : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1380

Contr.-rod trav.mm: 10.40...10.50

Del.quantity cm3/ : 6.3...6.4

100H.: (6.1...6.6)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 7.8...8.0

Del.quantity cm3/ : 0.6...1.0
100H.: (0.4...1.2)

Dispersion cm3/ : 0.2
100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.10

Governor-spring reload

Notch setting x : 4.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1380

Del.quantity cm3/ : 63.0...64.0
1000H.: (61.0...66.0)

Dispersion cm3/ : 3.00
1000H.: (4.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 59...67

Testing:

1st c-rod trav.mm : 9.40

Speed 1/min : 1430...1440

2nd c-rod trav.mm : 4.00

Speed 1/min : 1480...1510

4th speed 1/min : 1575

C-rod trav.mm : 0.30...1.70

LOWEST RATED SPEED I

Control-lever

position degrees: 24...32

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 7.9

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 7.80...8.00

C-rod trav.mm : 2.00

Speed 1/min : 480...540

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1380

C-rod trav.mm : 10.40...10.50

2nd speed 1/min : 500

C-rod trav.mm : 11.70...11.80

3rd speed 1/min : 900

C-rod trav.mm : 11.10...11.30

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 52.0...54.0

1000H.: (49.5...56.5)

Dispersion cm3/ : -

1000H.: (5.50)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.40

Speed 1/min : 1430...1440

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 78.0...88.0

1000H.: (75.0...91.0)

Contr.-rod trav.mm: 16.30...16.70

LOW IDLE

Speed 1/min : 350

Contr.-rod trav.mm: 7.80...8.00

Del.quantity cm3/ : 6.0...10.0

1000H.: (4.0...12.0)

Dispersion cm3/ : 2.50

1000H.: (4.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 4,0 C
Edition : 2.9.87
Superceeded : 3.87
Calibrating oil : ISO-4113

Combination no. : 0 400 874 243

Injection pump
Pump designation : PES4A90D410RS2666-2L
EP type number : 0 410 894 033
Governor
Governor design. : RSV350...1200A2C1139
-2L
Governor no. : 0 420 232 471

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 50.0
Speed 1/min: 2400

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 4- 2

SD ang. spacing^oCS: 0-90-180-270
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1200

Contr.-rod trav.mm: 9.40...9.50

Del.quantity cm3/ : 4.9...5.0

100H.: (4.7...5.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 8.1...8.7

Del.quantity cm3/ : 1.0...1.2

100H.: (0.8...1.4)

Dispersion cm3/ : 0.2

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 5.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Del.quantity cm3/ : 49.0...50.0

1000H.: (47.0...52.0)

Dispersion cm3/ : 3.00

1000H.: (5.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 49...57

Testing:

1st c-rod trav.mm : 8.40

Speed 1/min : 1240...1245

2nd c-rod trav.mm : 4.00

Speed 1/min : 1286...1299

3rd c-rod trav.mm : 4.00

Speed 1/min : 1325...1355

4th speed 1/min : 1530

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 8.40

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 8.40

C-rod trav.mm : 2.00

Speed 1/min : 530...590

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1200

C-rod trav.mm : 9.40...9.50

2nd speed 1/min : 800

C-rod trav.mm : 10.50...10.60

3rd speed 1/min : 950

C-rod trav.mm : 10.30...10.50

4th speed 1/min : 1050

C-rod trav.mm : 9.70...10.00

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 800

Del.quantity cm3/ : 45.0...47.0

1000H.: (42.5...49.5)

Speed 1/min : 1000

Del.quantity cm3/ : 48.0...51.0

1000H.: (45.5...53.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.40

Speed 1/min : 1240...1245

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 80.0...90.0

1000H.: (77.0...93.0)

Contr.-rod trav.mm: 16.20...16.60

LOW IDLE

Speed 1/min : 350

Contr.-rod trav.mm: 8.10...8.70

Del.quantity cm3/ : 10.0...12.0

1000H.: (8.0...14.0)

Dispersion cm3/ : 2.50

1000H.: (4.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 M12
Edition : 2.9.87
Superceeded : 5.87
Calibrating oil : ISO-4113

Combination no. : 0 400 876 108

Injection pump
Pump designation : PES6A80D41ORS2085x
EP type number : 0 410 886 045
Governor
Governor design. : RSV350...1400A2C
1001L
Governor no. : 0 420 232 464

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 66.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1400

Contr.-rod trav.mm: 8.50...8.60

Del.quantity cm3/ : 4.1...4.2

100H.: (4.0...4.4)

Dispersion cm3/ : 0.2

100H.: (0.3)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 7.4...7.6

Del.quantity cm3/ : 1.0...1.4

100H.: (0.8...1.5)

Dispersion cm3/ : 0.2

100H.: (0.3)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...1.00

Governor-spring reload

Notch setting x : 4.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1400

Del.quantity cm3/ : 41.5...42.5

1000H.: (40.0...44.0)

Dispersion cm3/ : 2.00

1000H.: (3.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 46...54

Testing:

1st c-rod trav.mm : 7.50

Speed 1/min : 1455...1465

2nd c-rod trav.mm : 4.00

Speed 1/min : 1475...1505

3rd c-rod trav.mm : 4.00

Speed 1/min : 1525...1555

4th speed 1/min : 1600

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 7.5

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 7.50

C-rod trav.mm : 2.00

Speed 1/min : 730...790

TORQUE CONTROL

Dimension a mm : 0.50

Torque-control curve - 1st version

1st speed 1/min : 1400

C-rod trav.mm : 8.50...8.60

2nd speed 1/min : 500

C-rod trav.mm : 9.80...9.90

3rd speed 1/min : 800

C-rod trav.mm : 8.80...9.10

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 40.5...42.5

1000H.: (38.5...44.5)

Speed 1/min : 800

Del.quantity cm3/ : 39.0...41.0

1000H.: (37.0...43.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 7.50

Speed 1/min : 1455...1465

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 78.0...88.0

1000H.: (75.0...91.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 Q17
 Edition : 2.9.87
 Superseded : 12.86
 Calibrating oil : ISO-4113

Combination no. : 0 400 876 259

Injection pump
 Pump designation : PES6A90D41ORS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RSV350...1400AOC
 1080L
 Governor no. : 0 420 232 408

Customer-spec. information
 Customer : DAIMLER BENZ

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1400

Contr.-rod trav.mm: 9.70...9.80

Del.quantity cm3/ : 6.3...6.4
 100H.: (6.1...6.6)

Dispersion cm3/ : 0.3
 100H.: (0.4)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.5...7.1

Del.quantity cm3/ : 1.0...1.2
 100H.: (0.8...1.4)

Dispersion cm3/ : 0.2
 100H.: (-)

SLEEVE POSITION

Control-lever position
 Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload
 Notch setting x : 3.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1400

Del.quantity cm3/ : 63.0...64.0
 1000H.: (61.0...66.0)

Dispersion cm3/ : 3.00
 1000H.: (4.50)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 64...72

Testing:

1st c-rod trav.mm : 8.70
 Speed 1/min : 1440...1445

2nd c-rod trav.mm : 4.00
 Speed 1/min : 1473...1486

3rd c-rod trav.mm : 4.00
 Speed 1/min : 1510...1540

4th speed 1/min : 1570
 C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Setting point w/out aux. spring
 Speed 1/min : 350

Contr.-rod trav.mm: 6.80

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 350
C-rod trav.mm : 6.80
C-rod trav.mm : 2.00
Speed 1/min : 450...510

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1400
C-rod trav.mm : 9.70...9.80
2nd speed 1/min : 600
C-rod trav.mm : 9.80...10.00

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 51.0...53.0
1000H.: (49.0...55.0)
Speed 1/min : 850
Del.quantity cm3/ : 56.0...58.0
1000H.: (53.5...60.5)

ROTATIONAL-SPEED LIMITATION

1st version
Imm control-rod travel less than

full-load trav.mm: 8.70
Speed 1/min : 1440...1445

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 15.00...15.40

LOW IDLE

Speed 1/min : 350
Contr.-rod trav.mm: 6.50...7.10
Del.quantity cm3/ : 10.0...12.0
1000H.: (8.0...14.0)
Dispersion cm3/ : 2.00
1000H.: (-)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 S10
Edition : 2.9.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 400 876 263
Injection pump
Pump designation : PES6A90D41ORS2293
EP type number : 0 410 896 031
Governor
Governor design. : RSV350...1300AOC
1107L
Governor no. : 0 420 232 415

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 80.9
Speed 1/min: 2600

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
(2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1300

Contr.-rod trav.mm: 8.70...8.80

Del.quantity cm3/ : 5.0...5.1

100H.: (4.8...5.3)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.6...7.2

Del.quantity cm3/ : 1.0...1.2

100H.: (0.8...1.4)

Dispersion cm3/ : 0.2

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...1.00

Governor-spring reload
Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300

Del.quantity cm3/ : 50.0...51.0

1000H.: (48.0...53.0)

Dispersion cm3/ : 3.00

1000H.: (4.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 62...70

Testing:

1st c-rod trav.mm : 7.70

Speed 1/min : 1340...1345

2nd c-rod trav.mm : 4.00

Speed 1/min : 1370...1383

3rd c-rod trav.mm : 4.00

Speed 1/min : 1390...1420

4th speed 1/min : 1550

C-rod trav.mm : 0.30...1.70

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 6.90

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 6.90

C-rod trav.mm : 2.00

Speed 1/min : 485...545

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1300

C-rod trav.mm : 8.70...8.80

2nd speed 1/min : 500

C-rod trav.mm : 9.90...10.00

3rd speed 1/min : 900

C-rod trav.mm : 9.10...9.30

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 47.5...49.5

1000H.: (45.0...52.0)

Speed 1/min : 900

Del.quantity cm3/ : 50.5...53.5

1000H.: (48.0...56.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 7.70

Speed 1/min : 1340...1345

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 78.0...88.0

1000H.: (75.0...91.0)

Contr.-rod trav.mm: 14.80...15.20

LOW IDLE

Speed 1/min : 350

Contr.-rod trav.mm: 6.60...7.20

Del.quantity cm3/ : 10.0...12.0

1000H.: (8.0...14.0)

Dispersion cm3/ : 2.00

1000H.: (4.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 6,1 E 3
 Edition : 26.06.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 876 275
 Injection pump
 Pump designation : PES6A95D410RS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RSV325...1150A8C674L
 Governor no. : 0 420 232 331

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 132.0
 Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1150

 Contr.-rod trav.mm: 11.80...11.90

 Del.quantity cm3/ : 10.8...11.0

 100H.: (10.6...11.2)

 Dispersion cm3/ : 0.3

 100H.: (0.6)

 2nd speed 1/min: 325.0
 Contr.-rod trav. m: 7.2...7.4
 Del.quantity cm3/ : 1.6...2.2
 100H.: (1.3...2.4)
 Dispersion cm3/ : 0.3
 100H.: (0.5)

SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed 1/min: 800
 Contr.-rod travelmm: 0.30...0.70
 Governor-spring reload
 Notch setting x : 4.75

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1150
 Charge press. hPa : 700
 Del.quantity cm3/ : 108.0...110.0
 1000H.: (106.0...112.0)
 Dispersion cm3/ : 3.00
 1000H.: (6.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 52...60

Testing:
 1st c-rod trav.mm : 10.80
 Speed 1/min : 1190...1200
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 1235...1265
 3rd c-rod trav.mm : 4.00
 Speed 1/min : 1285...1315
 4th speed 1/min : 1400

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever

position degrees: 17...25

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 6.8

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 6.70...6.90

C-rod trav.mm : 2.00

Speed 1/min : 585...645

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1150

C-rod trav.mm : 11.80...11.90

2nd speed 1/min : 500

C-rod trav.mm : 11.80...12.00

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.90...10.00

2nd pressure hPa : 220

C-rod trav.mm : 11.20...11.30

3rd pressure hPa : 140

C-rod trav.mm : 10.90...11.10

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700

Speed 1/min : 850

Del.quantity cm3/ : 103.5...106.5

1000H.: (101.0...109.0)

Dispersion cm3/ : -

1000H.: (7.00)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 62.0...64.0

1000H.: (60.0...66.0)

SETTING CONTROL-ROD STOP

Speed 1/min : 500

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.80

Speed 1/min : 1190...1200

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 120.0...130.0

1000H.: (117.0...133.0)

Contr.-rod trav.mm: 15.50...15.90

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

The stop position of the control rod must be easily reached with the stop lever

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 V 18
 Edition : 26.06.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 876 293
 Injection pump
 Pump designation : PES6A90D41ORS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RSV350...1400AOC1141
 L
 Governor no. : 0 420 232 423

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 123.0
 Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1400

 Contr.-rod trav.mm: 11.90...12.00

 Del.quantity cm3/ : 7.4...7.5

 100H.: (7.2...7.7)

 Dispersion cm3/ : 0.3

 100H.: (0.4)

 2nd speed 1/min: 350.0
 Contr.-rod trav. m: 7.8...8.4
 Del.quantity cm3/ : 1.0...1.2
 100H.: (0.8...1.4)
 Dispersion cm3/ : 0.2
 100H.: (0.4)

SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed 1/min: 800
 Contr.-rod travelmm: 0.30...0.70

Governor-spring reload
 Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1400
 Charge press. hPa : 700
 Del.quantity cm3/ : 74.0...75.0
 1000H.: (72.0...77.0)
 Dispersion cm3/ : 3.00
 1000H.: (4.50)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 66...74

Testing:
 1st c-rod trav.mm : 10.90
 Speed 1/min : 1435...1440
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 1475...1488
 3rd c-rod trav.mm : 4.00
 Speed 1/min : 1520...1550

4th speed 1/min : 1680
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: -
Setting point w/out aux. spring
Speed 1/min : 350
Contr.-rod trav.mm: 8.1

Testing:

Speed 1/min : 100
C-rod trav.mm min : 16.00
Speed 1/min : 350
C-rod trav.mm : 8.00...8.20
C-rod trav.mm : 2.00
Speed 1/min : 580...640

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1400
C-rod trav.mm : 11.90...12.00
2nd speed 1/min : 900
C-rod trav.mm : 13.00...13.10
3rd speed 1/min : 1050
C-rod trav.mm : 12.50...12.70
4th speed 1/min : 1260
C-rod trav.mm : 11.90...12.00

compensator (LDA,ADA,ALDA) 1

1st version

Setting
Speed 1/min : 500
Pressure hPa : 700
Contr.-rod trav.mm: 13.10...13.20

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 11.30...11.40
2nd pressure hPa : 500
C-rod trav.mm : 12.60...12.70
3rd pressure hPa : 275
C-rod trav.mm : 11.60...11.80

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700
Speed 1/min : 900
Del.quantity cm3/ : 75.0...78.0
1000H.: (72.5...80.5)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 50.0...51.0
1000H.: (48.0...53.0)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 78.0...88.0
1000H.: (75.0...91.0)
Contr.-rod trav.mm: 16.10...16.50

LOW IDLE

Speed 1/min : 350
Contr.-rod trav.mm: 7.80...8.40
Del.quantity cm3/ : 10.0...12.0
1000H.: (8.0...14.0)
Dispersion cm3/ : 2.50
1000H.: (4.50)

Remarks:

Hydraulic latching of starting
delivery.

Latching at 0.4 bar ... 0.5 bar.

Unlatching at 0.25 bar...0.35 bar.

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LIE 8,4 A
 Edition : 28.08.87
 Superseded : 12.9.86
 Calibrating oil : ISO-4113
 Combination no. : 0 400 876 322
 Injection pump
 Pump designation : PES6A9SD41ORS2689
 EP type number : 0 410 896 916
 Governor
 Governor design. : RSV400...1000A1C2187
 L
 Governor no. : 0 420 232 387

Customer-spec. information
 Customer : LIEBHERR

Engine : D906 NA

1st version kW : 112.0
 Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 40...45

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 8.50...9.50
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 9.70...9.80

Del.quantity cm3/ : 8.1...8.3

100H.: (7.9...8.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 400.0

Contr.-rod trav. m: 6.4...6.6

Del.quantity cm3/ : 1.0...1.6

100H.: (0.7...1.8)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 4.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 81.0...83.0

1000H.: (79.0...85.0)

Dispersion cm3/ : 3.50

100CH.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 46...54

Testing:

1st c-rod trav.mm : 8.70

Speed 1/min : 1040...1050

2nd c-rod trav.mm : 4.00
Speed 1/min : 1050...1080
3rd c-rod trav.mm : 4.00
Speed 1/min : 1090...1220
4th speed 1/min : 1230
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 20...28
Setting point w/out aux. spring
Speed 1/min : 400
Contr.-rod trav.mm: 6.0

Testing:

Speed 1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 400
C-rod trav.mm : 6.40...6.60
C-rod trav.mm : 2.00
Speed 1/min : 530...590

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1000
C-rod trav.mm : 9.70...9.80
2nd speed 1/min : 500
C-rod trav.mm : 9.70...9.90

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 70.0...73.0
1000H.: (67.5...75.5)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 8.70
Speed 1/min : 1040...1050

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 400
Contr.-rod trav.mm: 6.40...6.60
Del.quantity cm3/ : 10.0...16.0
1000H.: (7.5...18.5)
Dispersion cm3/ : 3.50
1000H.: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 C
Edition : 21.08.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113

Combination no. : 0 400 876 331

Injection pump
Pump designation : PES6A90D41ORS2710
EP type number : 0 410 896 082
Governor
Governor design. : RSV350...1400A0C2006
-2L

Governer no. : 0 420 232 453

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
Speed 1/min: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values _ _ _ _

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1380

Contr.-rod trav.mm: 10.70...10.80

Del.quantity cm3/ : 6.5...6.6

100H.: (6.3...6.8)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 8.0...8.2

Del.quantity cm3/ : 0.6...1.0

100H.: (0.4...1.2)

Dispersion cm3/ : 0.2

100H.: (0.4)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...1.00

Governor-spring reload

Notch setting x : 4.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1380

Del.quantity cm3/ : 65.0...66.0

1000H.: (63.0...68.0)

Dispersion cm3/ : 3.00

1000H.: (4.50)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 57...65

Testing:

1st c-rod trav.mm : 9.70

Speed 1/min : 1430...1440

2nd c-rod trav.mm : 4.00

Speed 1/min : 1490...1520

4th speed 1/min : 1650

C-rod trav.mm : 0.30...1.70

LOWEST RATED SPEED I

Control-lever

position degrees: 24...32

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 8.1

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 8.00...8.20

C-rod trav.mm : 2.00

Speed 1/min : 480...540

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1380

C-rod trav.mm : 10.70...10.80

2nd speed 1/min : 500

C-rod trav.mm : 11.80...11.90

3rd speed 1/min : 900

C-rod trav.mm : 11.30...11.50

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500

Del.quantity cm3/ : 53.0...55.0

1000H.: (50.5...57.5)

Dispersion cm3/ : -

1000H.: (5.50)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.70

Speed 1/min : 1430...1440

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 78.0...88.0

1000H.: (75.0...91.0)

LOW IDLE

Speed 1/min : 350

Contr.-rod trav.mm: 8.00...8.20

Del.quantity cm3/ : 6.0...10.0

1000H.: (4.0...12.0)

Dispersion cm3/ : 2.50

1000H.: (4.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 6,2 0 4
 Edition : 12.06.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 400 876 341
 Injection pump
 Pump designation : PES6A95D320RS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV250...750A7C2206-1R
 Governor no. : 0 420 233 209
 Customer-spec. information
 Customer : DAF

Engine : DNTD620 (1500e

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Calibrating nozzle-holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Contr.-rod trav mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 8.50...9.50
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed 1/mi: 700

 Contr.-rod trav.mm: 11.60...11.70

 Del.quantity cm3/ : 7.0...7.2

 100H.: (6.8...7.4)

 Dispersion cm3/ : 0.3

 100H.: (0.6)

 2nd speed 1/min: 300.0
 Contr.-rod trav. m: 6.5...6.7
 Del.quantity cm3/ : 0.7...1.1
 100H.: (0.4...1.3)
 Dispersion cm3/ : 0.3
 100H.: (0.5)

SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed 1/min: 800
 Cont.-rod travelmm: 0.30...0.70

Governor-spring reload
 Notch setting x : 5.25

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 700
 Del.quantity cm3/ : 70.0...72.0
 1000H.: (68.0...74.0)
 Dispersion cm3/ : 3.50
 1000H.: (6.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 43...51

Testing:
 1st c-rod trav.mm : 10.60
 Speed 1/min : 745...750
 2nd c-rod trav.mm : 4.00

Speed 1/min : 775...790
4th speed 1/min : 935
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 21...29
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 6.6
Speed 1/min : 300
C-rod trav.mm : 6.50...6.70
C-rod trav.mm : 2.00
Speed 1/min : 310...370

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 6.50...6.70
Del.quantity cm3/ : 7.0...11.0
1000H.: (4.5...13.5)
Dispersion cm3/ : 3.50
1000H.: (5.50)

Remarks:
APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11,6 Y3
 Edition : 31.07.87
 Superceeded : 9.3.87
 Calibrating oil : ISO-4113
 Combination no. : 0 401 846 510
 Injection pump
 Pump designation : PE6P120A32ORS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RQ250/900PA754
 Governor no. : 0 421 801 288

Customer-spec. information
 Customer : DAF

Engine : DKX 1160E

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Contr.-rod trav.mm: 9.00...12.00

H04

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 600

 Contr.-rod trav.mm: 11.70...11.80

 Del.quantity cm3/ : 17.4...17.6

 100H.: (17.1...17.9)

 Dispersion cm3/ : 0.5

 100H.: (0.9)

 2nd speed 1/min: 250.0
 Contr.-rod trav. m: 6.7...6.9
 Del.quantity cm3/ : 1.4...2.0
 100H.: (1.1...2.3)
 Dispersion cm3/ : 0.8
 100H.: (1.2)

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 850
 Cont.-rod travelmm: 14.10...14.90

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 600
 Charge press. hPa : 700
 Del.quantity cm3/ : 174.0...176.0
 1000H.: (171.0...179.0)
 Dispersion cm3/ : 5.00
 1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:
 Speed 1/min : 850
 Contr.-rod trav.mm: 14.5

Testing:
 1st c-rod trav.mm : 10.00
 Speed 1/min : 925...940
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 995...1025
 4th speed 1/min : 1150
 C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 250
Contr.-rod trav.mm: 6.5

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.40
Speed 1/min : 250
C-rod trav.mm : 6.40...6.60
C-rod trav.mm : 2.00
Speed 1/min : 445...485

TORQUE CONTROL

Dimension a mm : 0.50
Torque-control curve - 1st version
1st speed 1/min : 875
C-rod trav.mm : 11.00...11.10
2nd speed 1/min : 600
C-rod trav.mm : 12.00...12.20
3rd speed 1/min : 700
C-rod trav.mm : 11.60...11.80
4th speed 1/min : 760
C-rod trav.mm : 11.20...11.50

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 600
Pressure hPa : 700
Contr.-rod trav.mm: 11.70...11.80

Measurement

Speed 1/min : 600
1st pressure hPa : -
C-rod trav.mm : 10.40...10.60
2nd pressure hPa : 300
C-rod trav.mm : 11.10...11.20
3rd pressure hPa : 250
C-rod trav.mm : 10.40...10.70

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700
Speed 1/min : 875
Del.quantity cm3/ : 170.0...174.0
1000H.: (167.0...177.0)
Charge press. hPa : -
Speed 1/min : 600
Del.quantity cm3/ : 140.0...142.0
1000H.: (137.0...145.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00
Speed 1/min : 925...940

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 305.0...345.0
1000H.: (301.0...349.0)
Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 6.40...6.60

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11,6 X1
Edition : 10.08.87
Superceeded : 9.3.87
Calibrating oil : ISO-4113

Combination no. : 0 401 846 530

Injection pump
Pump designation : PE6P110A32ORS407-1
EP type number : 0 411 816 147
Governor
Governor design. : RQ275/1000PA818
Governor no. : 0 421 801 360

Customer-spec. information
Customer : DAF

Engine : LT 160

1st version kW : 160.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 12.00...12.10

Del.quantity cm3/ : 13.4...13.6

100H.: (13.1...13.8)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 275.0

Contr.-rod trav. m: 7.3...7.5

Del.quantity cm3/ : 1.4...1.9

100H.: (1.1...2.1)

Dispersion cm3/ : 0.4

100H.: (0.7)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 600

Contr.-rod travelmm: 15.60...16.40

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 600

Del.quantity cm3/ : 134.0...136.0

1000H.: (131.5...138.5)

Dispersion cm3/ : 4.00

1000H.: (7.50)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 16.0

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1030...1045

2nd c-rod trav.mm : 4.00

Speed 1/min : 1090...1120

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED 1

Setting point w/out aux. spring

Speed 1/min : 275

H07

Contr.-rod trav.mm: 7.4

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.60

Speed 1/min : 275

C-rod trav.mm : 7.30...7.50

C-rod trav.mm : 2.00

Speed 1/min : 350...390

TORQUE CONTROL

Dimension a mm : 0.60

Torque-control curve - 1st version

1st speed 1/min : 980

C-rod trav.mm : 11.00...11.10

2nd speed 1/min : 550

C-rod trav.mm : 12.30...12.50

3rd speed 1/min : 745

C-rod trav.mm : 11.90...12.10

4th speed 1/min : 880

C-rod trav.mm : 11.20...11.50

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 980

Del.quantity cm3/ : 112.0...116.0

1000H.: (109.0...119.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1030...1045

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 245.0...285.0

1000H.: (241.0...289.0)

Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 275

Contr.-rod trav.mm: 7.30...7.50

Del.quantity cm3/ : 14.0...19.0

1000H.: (11.5...21.5)

Dispersion cm3/ : 4.50

1000H.: (7.50)

Remarks:

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11.6M14
Edition : 10.08.87
Superceeded : 2.6.87
Calibrating oil : ISO-4113
Combination no. : 0 401 846 542
Injection pump
Pump designation : PE6P100A32ORS384-1
EP type number : 0 411 806 189
Governor
Governor design. : RQ225/1000PA868
Governor no. : 0 421 801 403

Customer-spec. information
Customer : DAF

Engine : DKDL 1160 SB 220

1st version kW : 220.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 600
Contr.-rod trav.mm: 11.40...11.50
Del.quantity cm3/ : 9.8...10.0
100H.: (9.6...10.2)
Dispersion cm3/ : 0.3
100H.: (0.6)

2nd speed 1/min: 250.0
Contr.-rod trav. m: 7.5...7.7
Del.quantity cm3/ : 0.9...1.3
100H.: (0.6...1.5)
Dispersion cm3/ : 0.3
100H.: (0.5)

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 550
Contr.-rod travelmm: 15.20...16.40

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 600
Del.quantity cm3/ : 98.0...100.0
1000H.: (96.0...102.0)
Dispersion cm3/ : 3.50
1000H.: (6.00)

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 550
Contr.-rod trav.mm: 15.8

Testing:
1st c-rod trav.mm : 9.60
Speed 1/min : 1045...1060
2nd c-rod trav.mm : 4.00
Speed 1/min : 1100...1130
4th speed 1/min : 1250
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 250

Contr.-rod trav.mm: 7.6

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.40

Speed 1/min : 250

C-rod trav.mm : 7.50...7.70

C-rod trav.mm : 2.00

Speed 1/min : 345...385

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 600

C-rod trav.mm : 11.40...11.50

2nd speed 1/min : 1000

C-rod trav.mm : 10.60...10.80

3rd speed 1/min : 820

C-rod trav.mm : 11.10...11.30

4th speed 1/min : 900

C-rod trav.mm : 10.80...11.10

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1000

Del.quantity cm3/ : 93.0...97.0

1000H.: (90.5...99.5)

SETTING CONTROL-ROD STOP

Speed 1/min : 600

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.60

Speed 1/min : 1045...1060

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 180.0...220.0

1000H.: (176.0...224.0)

Contr.-rod trav.mm: 19.50...21.00

LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 7.50...7.70

Del.quantity cm3/ : 9.0...13.0

1000H.: (6.5...15.5)

Dispersion cm3/ : 3.50

1000H.: (5.50)

Remarks:

H09

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,0 C 2
Edition : 10.08.87
Superceeded : 4.85
Calibrating oil : ISO-4113

Combination no. : 0 401 846 748

Injection pump
Pump designation : PE6P110A32OLS3805-10
EP type number : 0 411 816 740
Governor
Governor design. : RQV300...1150PA524-4
Governor no. : 0 421 813 315

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 159.0
Speed 1/min: 2300
2nd version kW : 159.0
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

H10

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 3- 5- 2- 4- 1

SD ang. spacing⁰CS: 0-45-120-165-240-285
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 13.2...13.4

100H.: (12.9...13.6)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300.0
Contr.-rod trav. m: 7.8...8.0
Del.quantity cm3/ : 1.2...1.8
100H.: (0.9...2.0)
Dispersion cm3/ : 0.4
100H.: (0.7)

1st speed 1/min: 1150
Contr.-rod trav.mm: 12.5...12.6
Del.quantity cm3/ : 12.8...13.0
100H.: (-)
Dispersion cm3/ : 0.4
100H.: (0.8)

2nd speed 1/min: 300
Contr.-rod trav.mm: 8.30...8.50
Del.quantity cm3/ : 1.2...1.8
100H.: (-)
Dispersion cm3/ : 0.4
100H.: (0.7)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300
Sleeve travel mm: 1.60...1.80
2nd speed 1/min: 800
Sleeve travel mm: 5.80...6.20
3rd speed 1/min: 1200
Sleeve travel mm: 8.20...8.40
4th speed 1/min: 1260
Sleeve travel mm: 9.60...10.40

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1190

Cont.-rod trav.mm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Del.quantity cm3/ : 132.0...134.0

1000H.: (129.5...136.5)

Dispersion cm3/ : 4.00

1000H.: (8.00)

2nd version

Speed 1/min: 1150

Del.quantity cm3/ : 128.0...130.0

1000H.: (125.0...133.0)

Dispersion cm3/ : 4.0

1000H.: (8.0)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 51...59

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.00

Speed 1/min : 1240...1270

4th speed 1/min : 1400

C-rod trav.mm : 0.00...1.00

2nd version

Control-lever

position degrees: 61...69

Testing:

1st c-rod trav.mm : 11.50

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.00

Speed 1/min : 1240...1270

4th speed 1/min : 1400

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 18...26

Testing:

Speed 1/min : 100

C-rod trav.mm min : 9.50

Speed 1/min : 300

C-rod trav.mm : 7.80...8.00

CONSTANT REGULATION

Speed 1/min : 300...450

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600

Del.quantity cm3/ : 110.0...114.0

1000H.: (107.0...117.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

Speed 1/min : 600

Del.quantity cm3/ : 120.0...124.0

1000H.: (117.0...127.0)

Dispersion cm3/ : 6.0

1000H.: (9.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.70

Speed 1/min : 1190...1200

2nd version

1mm control-rod travel less than

full-load trav.mm: 11.50

Speed 1/min : 1190...1200

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

See VDT-I-401/102.

Version 1: Without return-flow
restriction

Version 2: With return-flow restriction

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 12,0 K
Edition : 24.07.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113
Combination no. : 0 401 846 772
Injection pump
Pump designation : PE6P120A32ORS3118
EP type number : 0 411 826 726
Governor
Governor design. : RQV250...102SPA657
Governor no. : 0 421 813 368

Customer-spec. information
Customer : VOLVO

Engine : TD 121 F

1st version kW : 282.4
Speed 1/min: 2050

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
: (2.55...2.75)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.30...13.40

Del.quantity cm3/ : 23.8...24.0

100H.: (23.5...24.3)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0
Contr.-rod trav. m: 3.3...3.5
Del.quantity cm3/ : 1.8...2.3
Dispersion cm3/ : 0.5
100H.: (0.7)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250
Sleeve travel mm: 1.10...1.30
2nd speed 1/min: 500
Sleeve travel mm: 4.10...4.90
3rd speed 1/min: 700
Sleeve travel mm: 6.30...6.70
4th speed 1/min: 900
Sleeve travel mm: 6.30...6.70
5th speed 1/min: 1025
Sleeve travel mm: 7.30...7.90

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1080
Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 700
Charge press. hPa : 1200
Del.quantity cm3/ : 238.5...240.5
1000H.: (235.5...243.5)

Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 61...69

Testing:

1st c-rod trav.mm : 12.30
Speed 1/min : 1085...1095
2nd c-rod trav.mm : 4.00
Speed 1/min : 1150...1180
4th speed 1/min : 1250
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 6...14

Testing:

Speed 1/min : 100
C-rod trav.mm min : 4.80
Speed 1/min : 250
C-rod trav.mm : 3.30...3.50
C-rod trav.mm : 2.00
Speed 1/min : 285...345

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1200
Contr.-rod trav.mm: 13.30...13.40

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8.60...8.80
2nd pressure hPa : 780
C-rod trav.mm : 13.10...13.20
3rd pressure hPa : 100
C-rod trav.mm : 9.10...9.40

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 700
Del.quantity cm3/ : 139.0...141.0
1000H.: (136.0...144.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 12.30
Speed 1/min : 1085...1095

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...280.0
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 3.30...3.50
Del.quantity cm3/ : 18.0...23.0
Dispersion cm3/ : 5.00
1000H.: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet	: VOL 12,0 I
Edition	: 24.07.87
Superceeded	: 25.9.86
Calibrating oil	: ISO-4113
Combination no.	: 0 401 846 773
Injection pump	
Pump designation	: PE6P120A320RS3116
EP type number	: 0 411 826 727
Governor	
Governor design.	: RQV250...1025PA657
Governor no.	: 0 421 813 368

Customer-spec. information
Customer : VOLVO

Engine : TD 120 G

1st version KW : 242.7
Speed 1/min: 2050

TEST BENCH REQUIREMENTS

Calibrating-gil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values

START OF DELIVERY
Test pressure, bar: 25...27

```
Prestroke mm      : 2.60...2.70
                  : (2.55...2.75)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 1- 5- 3- 6- 2- 4
```

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + -^o: 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.40...11.50

Del.quantity cm3/ : 19.6...19.8

1004.: (19.3...20.1)

Dispersion cm³/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.5...5.7

Del. quantity cm3/ : 1.8...2.3
100H.: (1.5...2.6)

Dispersion cm³/ : 0.5
100H.: (0.7)

(B) Setting of injection pump with externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250
Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 500
Sleeve travel mm: 4.10...4.90

3rd speed 1/min: 700
Sleeve travel mm: 6.30...6.70

4th speed 1/min: 900
Sleeve travel mm: 6.30...6.70

5th speed 1/min: 1025
Sleeve travel mm: 7.30...7.80

SLEEVE POSITION

Control-lever position
Degree: -1

Speed 17/min: 1080
Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

```
1st version
Speed          1/min: 700
Charge press. hPa : 700
```

Del.quantity cm3/ : 196.5...198.5
1000H.: (193.5...201.5)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 58...66

Testing:
1st c-rod trav.mm : 10.40
Speed 1/min : 1065...1075
2nd c-rod trav.mm : 4.00
Speed 1/min : 1125...1155
4th speed 1/min : 1250
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 6...14

Testing:
Speed 1/min : 100
C-rod trav.mm min : 7.00
Speed 1/min : 250
C-rod trav.mm : 5.50...5.70
C-rod trav.mm : 2.00
Speed 1/min : 350...410

compensator (LDA,ADA,ALDA)

1st version
Setting
Speed 1/min : 500
Pressure hPa : 700
Contr.-rod trav.mm: 11.40...11.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 9.00...9.10
2nd pressure hPa : 450
C-rod trav.mm : 11.20...11.30
3rd pressure hPa : 170
C-rod trav.mm : 9.30...9.60

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 700
Del.quantity cm3/ : 151.0...153.0
1000H.: (148.0...156.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 10.40

Speed 1/min : 1065...1075

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...270.0
1000H.: (236.0...274.0)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 5.50...5.70
Del.quantity cm3/ : 18.0...23.0
1000H.: (15.0...26.0)
Dispersion cm3/ : 5.00
1000H.: (7.00)

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 A9
Edition : 18.8.87
Superceeded : 10.85
Calibrating oil : ISO-4113
Combination no. : 0 402 036 047
Injection pump
Pump designation : PES6P120A720/3
LS470-3
EP type number : 0 412 026 051
Governor
Governor design. : RQ250/1100PA679
Governor no. : 0 421 801 228

Customer-spec. information
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,80...2,90
: (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750
Contr.-rod trav.mm: 12,70...12,80
Del.quantity cm3/ : 23,0...23,2
100H.: (22,7...23,5)
Dispersion cm3/ : 0,5
100H.: (0,9)

2nd speed 1/min: 250,0
Contr.-rod trav. m: 5,6...5,8
Del.quantity cm3/ : 1,2...1,8
100H.: (0,9...2,1)
Dispersion cm3/ : 0,8
100H.: (1,2)

SLEEVE POSITION

Control-lever position
Degree: 45...47
Speed 1/min: 600
Contr.-rod travelmm: 19,20...20,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 230,0...232,0
1000H.: (227,0...235,0)
Dispersion cm3/ : 5,0
1000H.: (9,0)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: -
Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 20,0

Testing:

1st c-rod trav.mm : 10,90
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4,00
Speed 1/min : 1185...1215
4th speed 1/min : 1350
C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever
position degrees: 8...16
Setting point w/out aux. spring
Speed 1/min : 250
Contr.-rod trav.mm: 5,7

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7,20
Speed 1/min : 250
C-rod trav.mm : 5,70
C-rod trav.mm : 2,00
Speed 1/min : 330...370

TORQUE CONTROL

Dimension a mm : 0.40
Torque-control curve - 1st version
1st speed 1/min : 750
C-rod trav.mm : 13,00...13,10
2nd speed 1/min : 1100
C-rod trav.mm : 11,90...12,00
3rd speed 1/min : 965
C-rod trav.mm : 12,60...12,80
4th speed 1/min : 1010
C-rod trav.mm : 12,30...12,60

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 12,70...12,80

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 9,40...9,50
2nd pressure hPa : 130
C-rod trav.mm : 9,70...9,80
3rd pressure hPa : 400
C-rod trav.mm : 11,10...11,50

SWITCH-OVER POINT

Speed 1/min : 190 (210)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000
Speed 1/min : 1100
Del.quantity cm3/ : 219,0...223,0
1000H.: (216,0...226,0)
Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 231,0...237,0
1000H.: (228,0...240,0)
Charge press. hPa : 400
Speed 1/min : 500
Del.quantity cm3/ : 179,0...191,0
1000H.: (176,0...194,0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 128,0...130,0
1000H.: (125,0...133,0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10,90
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225,0...245,0
1000H.: (221,0...249,0)

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 5,60...5,80
Del.quantity cm3/ : 12,0...18,0
1000H.: (9,0...21,0)
Dispersion cm3/ : 8,0
1000H.: (12,0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A26
Edition : 31.07.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 036 049
Injection pump
Pump designation : PES6P120A720/3LS470-
2
EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA658-23
Governor no. : 0 421 801 391

Customer-spec. information
Customer : MAN

Engine : D2866MUH

1st version kW : 265.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 12.50...12.60

Del.quantity cm3/ : 23.8...24.0

100H.: (23.5...24.3)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0
Contr.-rod trav. m: 4.8...5.0
Del.quantity cm3/ : 1.2...1.8
100H.: (0.9...2.1)
Dispersion cm3/ : 0.8
100H.: (1.2)

SLEEVE POSITION

Control-lever position
Degree: 45...47
Speed 1/min: 600
Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 238.0...240.0
1000H.: (235.0...243.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 20.0

Testing:
1st c-rod trav.mm : 10.30
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00

Speed 1/min : 1180...1210
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 7...15
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 4.9

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.40
Speed 1/min : 300
C-rod trav.mm : 4.90
C-rod trav.mm : 2.00
Speed 1/min : 345...385

TORQUE CONTROL

Dimension a mm : 0.65
Torque-control curve - 1st version
1st speed 1/min : 750
C-rod trav.mm : 12.60...12.90
2nd speed 1/min : 1100
C-rod trav.mm : 11.30...11.40
3rd speed 1/min : 935
C-rod trav.mm : 12.10...12.50
4th speed 1/min : 990
C-rod trav.mm : 11.80...12.10

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 12.50...12.60

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8.60...8.70
2nd pressure hPa : 190
C-rod trav.mm : 8.90...9.00
3rd pressure hPa : 520
C-rod trav.mm : 11.10...11.40

SWITCH-OVER POINT

Speed 1/min : 190 (210)

FUEL-DELIVERY CHARACTERISTICS

1st version
Charge press. hPa : 1000
Speed 1/min : 1100

Del.quantity cm3/ : 213.0...219.0
1000H.: (210.0...222.0)
Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 239.0...245.0
1000H.: (236.0...248.0)
Charge press. hPa : 520
Speed 1/min : 500
Del.quantity cm3/ : 188.0...200.0
1000H.: (185.0...203.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 115.0...117.0
1000H.: (112.0...120.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 10.30
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 4.80...5.00
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A25
 Edition : 22.05.87
 Superceeded : 12.86
 Calibrating oil : ISO-4113
 Combination no. : 0 402 036 050
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQ300...1100PA684-3
 Governor no. : 0 421 801 356

Customer-spec. information
 Customer : MAN

Engine : D2866KF/K

1st version kW : 265.0
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 12.20...12.30

Del.quantity cm3/ : 22.8...23.0

100H.: (22.5...23.3)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100H.: (0.9...2.1)

Dispersion cm3/ : 0.8

100H.: (1.2)

SLEEVE POSITION

Control-lever position

Degree: 45...47

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 750

Charge press. hPa : 1000

Del.quantity cm3/ : 228.0...230.0

1000H.: (225.0...233.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.20

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1180...1210
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 4.8

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.30

Speed 1/min : 300

C-rod trav.mm : 4.80

C-rod trav.mm : 2.00

Speed 1/min : 345...405

TORQUE CONTROL

Dimension a mm : 0.55

Torque-control curve - 1st version

1st speed 1/min : 750

C-rod trav.mm : 12.50...12.70

2nd speed 1/min : 1100

C-rod trav.mm : 11.20...11.30

3rd speed 1/min : 935

C-rod trav.mm : 12.00...12.30

4th speed 1/min : 990

C-rod trav.mm : 11.60...11.90

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1000

Contr.-rod trav.mm: 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.30...9.50

2nd pressure hPa : 120

C-rod trav.mm : 9.60...9.70

3rd pressure hPa : 400

C-rod trav.mm : 11.00...11.40

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000

Speed 1/min : 1100

Del.quantity cm3/ : 210.0...214.0

1000H.: (207.0...217.0)

Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 228.0...234.0
1000H.: (225.0...237.0)
Charge press. hPa : 400
Speed 1/min : 500
Del.quantity cm3/ : 188.0...200.0
1000H.: (185.0...203.0)
Speed 1/min : 500
Del.quantity cm3/ : 139.0...141.0
1000H.: (136.0...144.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.20
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:
: MAN-NR. 2-7598

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A16
Edition : 18.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113

Combination no. : 0 402 036 059

Injection pump
Pump designation : PES6P120A720/3
LS470-2
EP type number : 0 412 026 050
Governor
Governor design. : RQV300...1100PA669-1
Governor no. : 0 421 813 53

Customer-spec. information
Customer : MAN

Engine : D2866KUHk

1st version kW : 265.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2,80...2,90
 : (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 12,50...12,60

Del.quantity cm3/ : 23,8...24,0

 100H.: (23,5...24,3)

Dispersion cm3/ : 0,5

 100H.: (0,9)

2nd speed 1/min: 250
Contr.-rod trav. m: 4,80...5,00
Del.quantity cm3/ : 1,2...1,8
 100H.: (0,9...2,1)
Dispersion cm3/ : 0,8
 100H.: (1,2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300
Sleeve travel mm: 1,70...2,00
2nd speed 1/min: 850
Sleeve travel mm: 6,00...6,20
3rd speed 1/min: 1100
Sleeve travel mm: 8,10...8,30

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1130
Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 238,0...240,0
 1000H.: (235,0...243,0)
Dispersion cm3/ : 5,0
 1000H.: (9,0)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 60...68

Testing:

1st c-rod trav.mm : 10,30
Speed 1/min : 1140...1150
2nd c-rod trav.mm : 4,00
Speed 1/min : 1225...1255
4th speed 1/min : 1350
C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever
position degrees: 6...14

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6,40
Speed 1/min : 300
C-rod trav.mm : 4,80...5,00
C-rod trav.mm : 2,00
Speed 1/min : 360...420

TORQUE CONTROL

Dimension a mm : 1,15
Torque-control curve - 1st version
1st speed 1/min : 750
C-rod trav.mm : 12,50...12,60
2nd speed 1/min : 1100
C-rod trav.mm : 11,30...11,40
3rd speed 1/min : 900
C-rod trav.mm : 12,10...12,30
4th speed 1/min : 1000
C-rod trav.mm : 11,50...11,80

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 12,50...12,60

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8,60...8,70
2nd pressure hPa : 190
C-rod trav.mm : 8,90...9,00
3rd pressure hPa : 520
C-rod trav.mm : 11,10...11,40

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000
Speed 1/min : 1100
Del.quantity cm3/ : 213,0...219,0
1000H.: (210,0...222,0)
Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 239,0...245,0
1000H.: (236,0...248,0)
Charge press. hPa : 520
Speed 1/min : 500
Del.quantity cm3/ : 188,0...200,0
1000H.: (188,0...200,0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 115,0...117,0
1000H.: (112,0...120,0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10,30
Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225,0...245,0
1000H.: (221,0...249,0)

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 4,80...5,00
Del.quantity cm3/ : 12,0...18,0
1000H.: (9,0...21,0)
Dispersion cm3/ : 8,0
1000H.: (12,0)

Remarks:

: MAN-NR. 2-7734

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A22
Edition : 18.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113
Combination no. : 0 402 036 061
Injection pump
Pump designation : PES6P120A720/3
LS470-2
EP type number : 0 412 026 050
Governor
Governor design. : RQV300...1100PA700-2
Governor no. : 0 421 813 543

Customer-spec. information
Customer : MAN

Engine : D2866LFZ/290

1st version kW : 213,0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2,80...2,90
: (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 10,30...10,40

Del.quantity cm3/ : 18,3...18,5

100H.: (18,0...18,8)

Dispersion cm3/ : 0,5

100H.: (0,9)

2nd speed 1/min: 300,0

Contr.-rod trav. m: 4,8...5,0

Del.quantity cm3/ : 1,2...1,8

100H.: (0,9...2,1)

Dispersion cm3/ : 0,8

100H.: (1,2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1,50...1,70

2nd speed 1/min: 850

Sleeve travel mm: 5,70...6,00

3rd speed 1/min: 1100

Sleeve travel mm: 8,00...8,20

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1130

Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 750

Charge press. hPa : 1000

Del.quantity cm3/ : 183,0...185,0

1000H.: (180,0...188,0)

Dispersion cm3/ : 5,0

1000H.: (9,0)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 62...70

Testing:

1st c-rod trav.mm : 8,70

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4,00

Speed 1/min : 1205...1235

4th speed 1/min : 1350

C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6,40

Speed 1/min : 300

C-rod trav.mm : 4,80...5,00

C-rod trav.mm : 2,00

Speed 1/min : 375...435

TORQUE CONTROL

Dimension a mm : 0,65

Torque-control curve - 1st version

1st speed 1/min : 750

C-rod trav.mm : 10,30...10,40

2nd speed 1/min : 1100

C-rod trav.mm : 9,70...9,80

3rd speed 1/min : 850

C-rod trav.mm : 10,20...10,30

4th speed 1/min : 925

C-rod trav.mm : 9,90...10,10

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1000

Contr.-rod trav.mm: 10,30...10,40

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 8,90...9,10

2nd pressure hPa : 85

C-rod trav.mm : 9,30...9,40

3rd pressure hPa : 160

C-rod trav.mm : 9,80...10,20

SWITCH-OVER POINT

Speed 1/min : 220 (240)

J05

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000

Speed 1/min : 1100

Del.quantity cm3/ : 178,0...182,0

1000H.: (175,0...185,0)

Charge press. hPa : 1000

Speed 1/min : 650

Del.quantity cm3/ : 174,0...180,0

1000H.: (171,0...183,0)

Charge press. hPa : 160

Speed 1/min : 500

Del.quantity cm3/ : 157,0...169,0

1000H.: (154,0...172,0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 132,0...134,0

1000H.: (129,0...137,0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8,70

Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 225,0...245,0

1000H.: (221,0...249,0)

LOW IDLE

Speed 1/min : 300

Contr.-rod trav.mm: 4,80...5,00

Del.quantity cm3/ : 12,0...18,0

1000H.: (9,0...21,0)

Dispersion cm3/ : 8,0

1000H.: (12,0)

Remarks:

: MAN-NR. 2-7761

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A24
Edition : 31.07.87
Superceeded : 9.86
Calibrating oil : ISO-4113

Combination no. : 0 402 036 062

Injection pump
Pump designation : PES6P120A720/3LS470-
2
EP type number : 0 412 026 050
Governor
Governor design. : RQ300/1100PA813
Governor no. : 0 421 801 358

Customer-spec. information
Customer : MAN

Engine : D2866LF

1st version kW : 243.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values ----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 11.30...11.40

Del.quantity cm3/ : 20.7...20.9

100H.: (20.4...21.2)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0
Contr.-rod trav. m: 4.7...4.9
Del.quantity cm3/ : 1.2...1.8
100H.: (0.9...2.1)
Dispersion cm3/ : 0.8
100H.: (1.2)

SLEEVE POSITION

Control-lever position
Degree: 45...47
Speed 1/min: 600
Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 207.0...209.0
1000H.: (204.0...212.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 20.0

Testing:
1st c-rod trav.mm : 9.70
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00

Speed 1/min : 1180...1210
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 4.8

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.30
Speed 1/min : 300
C-rod trav.mm : 4.80
C-rod trav.mm : 2.00
Speed 1/min : 340...380

TORQUE CONTROL

Dimension a mm : 0.50
Torque-control curve - 1st version
1st speed 1/min : 750
C-rod trav.mm : 12.00...12.30
2nd speed 1/min : 1100
C-rod trav.mm : 10.70...10.80
3rd speed 1/min : 900
C-rod trav.mm : 11.70...11.90
4th speed 1/min : 975
C-rod trav.mm : 11.00...11.30

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 11.30...11.40

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8.90...9.10
2nd pressure hPa : 85
C-rod trav.mm : 9.30...9.40
3rd pressure hPa : 280
C-rod trav.mm : 10.50...10.90

SWITCH-OVER POINT

Speed 1/min : 190 (210)

FUEL-DELIVERY CHARACTERISTICS

1st version
Charge press. hPa : 1000
Speed 1/min : 1100
Del.quantity cm3/ : 203.0...207.0
1000H.: (200.0...210.0)

Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 206.0...212.0
1000H.: (203.0...215.0)
Charge press. hPa : 280
Speed 1/min : 500
Del.quantity cm3/ : 184.0...196.0
1000H.: (181.0...199.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 132.0...134.0
1000H.: (129.0...137.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 9.70
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 G6
Edition : 18.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113

Combination no. : 0 402 036 064

Injection pump
Pump designation : PES6P110A720/3
LS477-2
EP type number : 0 412 016 071
Governor
Governor design. : RQ250/1100PA817-1
Governor no. : 0 421 801 362

Customer-spec. information
Customer : MAN

Engine : D2866UH/200

1st version kW : 150.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6,00X1,50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3,50...3,60
: (3,45...3,65)

Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6- 2- 4- 1- 5- 3

SD eng. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 10,50...10,60

Del.quantity cm3/ : 9,1...9,4
100H.: (8,8...9,6)

Dispersion cm3/ : 0,4
100H.: (0,7)

2nd speed 1/min: 250,0
Contr.-rod trav, m: 6,1...6,3
Del.quantity cm3/ : 1,5...2,0
100H.: (1,2...2,2)
Dispersion cm3/ : 0,4
100H.: (0,7)

SLEEVE POSITION

Control-lever position
Degree: 45...47
Speed 1/min: 600
Contr.-rod travelmm: 19,20...20,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 800
Del.quantity cm3/ : 91,0...94,0
1000H.: (88,5...96,5)
Dispersion cm3/ : 4,0
1000H.: (7,5)

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 20,0

Testing:
1st c-rod trav.mm : 9,50
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4,00
Speed 1/min : 1215...1245
4th speed 1/min : 1300
C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever
position degrees: 8...16
Setting point w/out aux. spring
Speed 1/min : 250
Contr.-rod trav.mm: 6,20

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7,70
Speed 1/min : 250
C-rod trav.mm : 6,20
C-rod trav.mm : 2,00
Speed 1/min : 320...360

TORQUE CONTROL

Torque-control curve - 1st version
1st speed 1/min : 1100
C-rod trav.mm : 10,50...10,60
2nd speed 1/min : 500
C-rod trav.mm : 10,50...10,70

SWITCH-OVER POINT

Speed 1/min : 170 (190)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1100
Del.quantity cm3/ : 101,0...109,0
1000H.: (98,0...112,0)
Speed 1/min : 500
Del.quantity cm3/ : 77,0...85,0
1000H.: (74,0...88,0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 9,50
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 110,0...130,0
1000H.: (106,0...134,0)

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 6,10...6,30
Del.quantity cm3/ : 15,0...20,0
1000H.: (12,5...22,5)
Dispersion cm3/ : 4,5
1000H.: (7,5)

Remarks:
APPLICATION

Omnibus



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11.9 B1
Edition : 18.8.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 036 065
Injection pump
Pump designation : PES6P110A720/3
LS477-2
EP type number : 0 412 016 071
Governor
Governor design. : RQV300...1100PA831
Governor no. : 0 421 813 574

Customer-spec. information
Customer : MAN

Engine : D2866 F

1st version kW : 177.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 12.3...12.6

100H.: (12.0...12.8)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm3/ : 1.5...2.0

100H.: (1.2...2.2)

Dispersion cm3/ : 0.4

100H.: (0.7)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 450

Sleeve travel mm: 3.00...3.40

3rd speed 1/min: 900

Sleeve travel mm: 6.00...6.30

4th speed 1/min: 1100

Sleeve travel mm: 7.70...7.90

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1170

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 123.0...126.0

1000H.: (120.5...128.5)

Dispersion cm3/ : 4.0

1000H.: (7.5)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 49...57

Testing:
1st c-rod trav.mm : 10.70
Speed 1/min : 1140...1150
2nd c-rod trav.mm : 4.00
Speed 1/min : 1230...1260
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I
Control-lever
position degrees: 16...24

Testing:
Speed 1/min : 100
C-rod trav.mm min : 7.50
Speed 1/min : 300
C-rod trav.mm : 5.90...6.10

CONSTANT REGULATION
Speed 1/min : 300...395

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 1100
Del.quantity cm3/ : 127.0...133.0
1000H.: (124.0...136.0)
Speed 1/min : 500
Del.quantity cm3/ : 115.0...121.0
1000H.: (112.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 10.70
Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 110.0...130.0
1000H.: (106.0...134.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 5.90...6.10
Del.quantity cm3/ : 15.0...20.0
1000H.: (12.5...22.5)
Dispersion cm3/ : 4.5
1000H.: (7.5)

Remarks:

: MAN-NR. 2-7723

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 G7
Edition : 18.8.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 036 066
Injection pump
Pump designation : PES6P110A720/3
LS477-2
EP type number : 0 412 016 071
Governor
Governor design. : RQ250/1100PA845
Governor no. : 0 421 801 380

Customer-spec. information
Customer : MAN

Engine : D2866 F

1st version kW : 177.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - ^o : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 12.3...12.6

100H.: (12.0...12.8)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5,90...6,10

Del.quantity cm3/ : 1.5...2.0

100H.: (1.2...2.2)

Dispersion cm3/ : 0.4

100H.: (0.7)

SLEEVE POSITION

Control-lever position

Degree: 45...47

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 123.0...126.0

1000H.: (120.5...128.5)

Dispersion cm3/ : 4.0

1000H.: (7.5)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1220...1250

4th speed 1/min : 1350

C-rod trav.mm : 115.0...123,0

LOWEST RATED SPEED I

Control-lever

position degrees: 8...16

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 6.0

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.50

Speed 1/min : 300

C-rod trav.mm : 6.00

C-rod trav.mm : 2.00

Speed 1/min : 320...360

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 850

C-rod trav.mm : 12.20...12.30

2nd speed 1/min : 1100

C-rod trav.mm : 12.10...12.30

SWITCH-OVER POINT

Speed 1/min : 170 (190)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1100

Del.quantity cm3/ : 127.0...133.0

1000H.: (124.0...136.0)

Speed 1/min : 500

Del.quantity cm3/ : 115.0...121.0

1000H.: (112.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.70

Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 110.0...130.0

1000H.: (106.0...134.0)

LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 5,90...6,10

Del.quantity cm3/ : 15.0...20.0

1000H.: (12.5...22.5)

Dispersion cm3/ : 4.5

1000H.: (7.5)

Remarks:

: MAN-NR. 2-7821

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 B2
Edition : 18.8.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 036 067

Injection pump
Pump designation : PES6P110A720/3
LS477-2
EP type number : 0 412 016 071
Governor
Governor design. : RQV300...1100PA846
Governor no. : 0 421 813 593

Customer-spec. information
Customer : MAN

Engine : D 2866 F

1st version kW : 177.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values _____

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3,50...3,60
: (3,45...3,65)

Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6-2-4-1-5-3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 11,70...11,80

Del.quantity cm3/ : 12,3...12,6

100H.: (12,0...12,8)

Dispersion cm3/ : 0,40

100H.: 0,75

2nd speed 1/min: 300

Contr.-rod trav. m: 5,90...6,10

Del.quantity cm3/ : 1,5...2,0

100H.: (1,2...2,2)

Dispersion cm3/ : 0,45

100H.: (0,75)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1,10...1,30

2nd speed 1/min: 450

Sleeve travel mm: 2,90...3,30

3rd speed 1/min: 900

Sleeve travel mm: 5,80...6,20

4th speed 1/min: 1100

Sleeve travel mm: 7,50...7,70

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1170

Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 123,0...126,0

1000H.: (120,5...128,5)

Dispersion cm3/ : 4,0

1000H.: (7,5)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 48...56

Testing:

1st c-rod trav.mm : 10,70

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4,00

Speed 1/min : 1240...1270

4th speed 1/min : 1350

C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever

position degrees: 15...23

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7,50

Speed 1/min : 300

C-rod trav.mm : 5,90...6,10

CONSTANT REGULATION

Speed 1/min : 305...460

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 1100

Del.quantity cm3/ : 127,0...133,0

1000H.: (124,0...136,0)

Speed 1/min : 500

Del.quantity cm3/ : 115,0...121,0

1000H.: (112,0...124,0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10,70

Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 110,0...130,0

1000H.: (106,0...134,0)

LOW IDLE

Speed 1/min : 300

Contr.-rod trav.mm: 5,90...6,10

Del.quantity cm3/ : 15,0...20,0

1000H.: (12,5...22,5)

Dispersion cm3/ : 4,5

1000H.: (7,5)

Remarks:

: MAN-NR. 2-7822

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A27
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 036 068

Injection pump
Pump designation : PES6P120A720/3LS470-
2

EP type number : 0 412 026 050

Governor

Governor design. : RQ300/1100PA658-22

Governer no. : 0 421 801 389

Customer-spec. information

Customer : MAN

Engine : D2866T0H

1st version kW : 213.0

Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 10.60...10.70

Del.quantity cm3/ : 19.1...19.3

100H.: (18.8...19.6)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 4.7...4.9

Del.quantity cm3/ : 1.2...1.8

100H.: (0.9...2.1)

Dispersion cm3/ : 0.8

100H.: (1.2)

SLEEVE POSITION

Control-lever position

Degree: 45...47

Speed 1/min: 650

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 750

Charge press. hPa : 1000

Del.quantity cm3/ : 191.0...193.0

1000H.: (188.0...196.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:

Speed 1/min : 650

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 9.30

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1180...1210

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 4.8

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.30

Speed 1/min : 300

C-rod trav.mm : 4.80

C-rod trav.mm : 2.00

Speed 1/min : 340...380

TORQUE CONTROL

Dimension a mm : 0.30

Torque-control curve - 1st version

1st speed 1/min : 750

C-rod trav.mm : 11.10...11.20

2nd speed 1/min : 1100

C-rod trav.mm : 10.30...10.40

3rd speed 1/min : 980

C-rod trav.mm : 10.80...11.00

4th speed 1/min : 1025

C-rod trav.mm : 10.40...10.70

*compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1000

Contr.-rod trav.mm: 10.30...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 8.80...8.90

2nd pressure hPa : 240

C-rod trav.mm : 9.10...9.20

3rd pressure hPa : 520

C-rod trav.mm : 10.00...10.40

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000

Speed 1/min : 1100

Del.quantity cm3/ : 193.0...197.0
1000H.: (190.0...200.0)
Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 184.0...190.0
1000H.: (181.0...193.0)
Charge press. hPa : 520
Speed 1/min : 500
Del.quantity cm3/ : 168.0...180.0
1000H.: (165.0...183.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 128.0...130.0
1000H.: (125.0...133.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 9.30
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 4.70...4.90
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:
: MAN-NR. 2-7820

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A28
Edition : 31.07.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 036 069

Injection pump
Pump designation : PES6P120A720/3LS470-
3
EP type number : 0 412 026 051
Governor
Governor design. : RQ300/1100PA679-2
Governor no. : 0 421 801 402

Customer-spec. information
Customer : MAN

Engine : D2866KUL

1st version kW : 213.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values

START OF DELIVERY

Test pressure, bar: 25...27

```

Prestroke mm      : 2.80...2.90
                  : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 6- 2- 4- 1- 5- 3

```

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + -^o : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 10.60...10.70

Del.quantity cm3/ : 18.3...18.5

100H.: (18.0...18.8)

Dispersion cm³/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 5.0...5.2

Del.quantity cm3/ : 1.2...1.8
100H.: (0.9...2.1)

Dispersion cm³/ : 0.8
100H,: (1.2)

SLEEVE POSITION

Control-lever position
Degree: 45...47

Speed 17min: 600
Cont.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

```

1st version
Speed      1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 183.0...185.0
              1000H.: (180.0...188.0)
Dispersion cm3/ : 5.00
              1000H.: (9.00)

```

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 20.0

```

Testing:
1st c-rod trav.mm : 9.60
  Speed    1/min : 1145...1160
2nd c-rod trav.mm : 4.00

```

Speed 1/min : 1180...1210
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 6...14
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 5.1

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.60
Speed 1/min : 300
C-rod trav.mm : 5.10
C-rod trav.mm : 2.00
Speed 1/min : 345...385

TORQUE CONTROL

Dimension a mm : 0.20
Torque-control curve - 1st version
1st speed 1/min : 1100
C-rod trav.mm : 10.60...10.70
2nd speed 1/min : 750
C-rod trav.mm : 11.20...11.40
3rd speed 1/min : 925
C-rod trav.mm : 10.70...11.00

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 10.60...10.70

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8.80...9.00
2nd pressure hPa : 210
C-rod trav.mm : 9.10...9.20
3rd pressure hPa : 375
C-rod trav.mm : 9.90...10.20

SWITCH-OVER POINT

Speed 1/min : 190 (210)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000
Speed 1/min : 1100
Del.quantity cm3/ : 190.0...196.0
1000H.: (187.0...199.0)

Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 174.0...180.0
1000H.: (171.0...183.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 119.0...121.0
1000H.: (116.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.60
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 5.00...5.20
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A29
Edition : 26.06.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 036 070

Injection pump
Pump designation : PES6P120A720/3LS470-
3
EP type number : 0 412 026 051
Governor
Governor design. : RQV300...1100PA707-2
Governor no. : 0 421 813 638

Customer-spec. information
Customer : MAN

Engine : D2866LUL/290

1st version kW : 213.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values ----

START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 10.60...10.70

Del.quantity cm3/ : 18.3...18.5
 100H.: (18.0...18.8)

Dispersion cm3/ : 0.5
 100H.: (0.9)

2nd speed 1/min: 250.0
Contr.-rod trav. m: 5.2...5.4
Del.quantity cm3/ : 1.2...1.8
 100H.: (0.9...2.1)
Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300
Sleeve travel mm: 1.60...1.80
2nd speed 1/min: 475
Sleeve travel mm: 3.10...3.50
3rd speed 1/min: 850
Sleeve travel mm: 5.50...5.90
4th speed 1/min: 1100
Sleeve travel mm: 7.40...7.60

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1175
Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 750
Charge press. hPa : 1000
Del.quantity cm3/ : 183.0...185.0
 1000H.: (180.0...188.0)

Dispersion cm3/ : 5.00
 1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 48...56

Testing:

1st c-rod trav.mm : 9.60
Speed 1/min : 1140...1150
2nd c-rod trav.mm : 4.00
Speed 1/min : 1225...1255
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 15...23

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.80
Speed 1/min : 300
C-rod trav.mm : 5.20...5.40

CONSTANT REGULATION

Speed 1/min : 310...410

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500
Pressure hPa : 1000
Contr.-rod trav.mm: 10.60...10.70

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 8.80...8.90
2nd pressure hPa : 210
C-rod trav.mm : 9.10...9.20
3rd pressure hPa : 375
C-rod trav.mm : 9.90...10.20

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000
Speed 1/min : 1100
Del.quantity cm3/ : 192.0...198.0
 1000H.: (189.0...201.0)

Charge press. hPa : 1000
Speed 1/min : 650
Del.quantity cm3/ : 172.0...178.0
1000H.: (169.0...181.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 119.0...121.0
1000H.: (116.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 9.60
Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 225.0...245.0
1000H.: (221.0...249.0)

LOW IDLE

Speed 1/min : 250
Contr.-rod trav.mm: 5.20...5.40
Del.quantity cm3/ : 12.0...18.0
1000H.: (9.0...21.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 9,5 A3
Edition : 09.03.87
Superceeded : 11.85
Calibrating oil : ISO-4113

Combination no. : 0 402 045 024

Injection pump
Pump designation : PES5P110A820LS434
EP type number : 0 412 015 020
Governor
Governor design. : RQV300...1100PA594-1
Governor no. : 0 421 813 336

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM409

1st version kW : 135.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 3- 5- 4- 2

SD ang. spacing^oCS: 0-72-144-216-288
Tolerance + - ^o : 0.50 (0.75)

SD mark cyl. no. : 5

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 11.0...11.2

100H.: (10.7...11.5)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 8.10...8.30

Del.quantity cm3/ : 1.2...1.8

100H.: (0.9...2.0)

Dispersion cm3/ : 0.4

100H.: (0.7)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 110.0...112.0

1000H.: (107.0...115.0)

Dispersion cm3/ : 4.00

1000H.: (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1175...1205

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 22...30

Testing:

Speed 1/min : 100

C-rod trav.mm min : 9.50

Speed 1/min : 300

C-rod trav.mm : 8.00...8.20

CONSTANT REGULATION

Speed 1/min : 320...435

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600

Del.quantity cm3/ : 91.0...93.0

1000H.: (88.0...96.0)

Dispersion cm3/ : -

1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 A
Edition : 14.08.87
Superceeded : 10.83
Calibrating oil : ISO-4113
Combination no. : 0 402 046 148
Injection pump
Pump designation : PES6P100A820LS351
EP type number : 0 412 006 028
Governor
Governor design. : RQ300/1100PA327R
Governor no. : 0 421 801 062

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 176.5
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-gil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 13.20...13.30

Del.quantity cm3/ : 12.2...12.4

100H.: (12.0...12.6)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300

Contr.-rod trav. m: 7.50...7.70

Del.quantity cm3/ : 0.6...1.2

100H.: (0.3...1.4)

Dispersion cm3/ : 0.3

100H.: (0.5)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 500

Contr.-rod travelmm: 14.30...15.10

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 122.0...124.0

1000H.: (120.0...126.0)

Dispersion cm3/ : 3.00

1000H.: (6.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 41...49

Setting point:

Speed 1/min : 500

Contr.-rod trav.mm: 14.7

Testing:

1st c-rod trav.mm : 12.20

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00
Speed 1/min : 1200...1230
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever
position degrees: 10...18
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 7.6

Testing:

Speed 1/min : 100
C-rod trav.mm min : 9.60
Speed 1/min : 300
C-rod trav.mm : 7.60
C-rod trav.mm : 2.00
Speed 1/min : 370...410

SETTING CONTROL-ROD STOP

Speed 1/min : 500

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 12.20
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 135.0...155.0
1000H.: (131.0...159.0)

Remarks:
APPLICATION
Omnibus

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 113...121

Testing:

1st c-rod trav.mm : 7.40

Speed 1/min : 1235...1245

2nd c-rod trav.mm : 4.00

Speed 1/min : 1290...1320

4th speed 1/min : 1450

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 62...70

Speed 1/min : 300

C-rod trav.mm : 3.20...3.40

Speed 1/min : 100

C-rod trav.mm max : 6.20

CONSTANT REGULATION

Speed 1/min : 320...440

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1150

C-rod trav.mm : 8.40

2nd speed 1/min : 750

C-rod trav.mm : 7.40...7.50

3rd speed 1/min : 500

C-rod trav.mm : 6.80...7.10

4th speed 1/min : 350

C-rod trav.mm : 6.60...7.00

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 750

Del.quantity cm3/ : 120.0...126.0

1000H.: (117.0...129.0)

Speed 1/min : 500

Del.quantity cm3/ : 67.0...73.0

1000H.: (64.0...76.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 7.40

Speed 1/min : 1235...1245

STARTING FUEL DELIVERY

Speed 1/min : 100

K07

Del.quantity cm3/ : 125.0...145.0
1000H.: (121.0...149.0)

LOW IDLE

Speed 1/min : 300

Contr.-rod trav.mm: 3.20...3.40

Del.quantity cm3/ : 18.0...24.0

1000H.: (15.0...27.0)

Dispersion cm3/ : 8.00

1000H.: (12.00)

Remarks:

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 8,8 B2
 Edition : 18.8.87
 Superseded : 5.84
 Calibrating oil : ISO-4113
 Combination no. : 0 402 046 247
 Injection pump
 Pump designation : PES6P120A32ORS417
 EP type number : 0 412 026 036
 Governor
 Governor design. : R2V300...1150PA
 S27-1K
 Governor no. : 0 421 815 165
 Customer-spec. information
 Customer : RVI

Engine : MIDR 062030

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke min : 2.80...2.90
 : (2.75...2.95)

Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 10.00...11.00

BASIC SETTING

1st speed 1/mi: 1150

 Contr.-rod trav.mm: 8.50...8.60

 Del.quantity cm3/ : 14.4...14.6

 100H.: (14.1...14.9)

 Dispersion cm3/ : 0.5

 100H.: (0.9)

 2nd speed 1/min: 600.0
 Contr.-rod trav. m: 2.70...2.90
 Del.quantity cm3/ : 1.8...2.4
 100H.: (1.5...2.7)
 Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300
 Sleeve travel mm: 1.70...2.10
 2nd speed 1/min: 900
 Sleeve travel mm: 5.80...6.20
 3rd speed 1/min: 1150
 Sleeve travel mm: 8.00...8.20

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1190
 Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1150
 Del.quantity cm3/ : 144.0...146.0
 1000H.: (141.0...149.0)
 Dispersion cm3/ : 5.00
 1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 56...64

Testing:
1st c-rod trav.mm : 7.50
Speed 1/min : 1205...1215
2nd c-rod trav.mm : 4.00
Speed 1/min : 1260...1290
4th speed 1/min : 1450
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I
Control-lever
position degrees: 6...14

Testing:
Speed 1/min : 100
C-rod trav.mm min : 6.30
Speed 1/min : 300
C-rod trav.mm : 3.30...3.50

CONSTANT REGULATION
Speed 1/min : 320...440

TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1150
C-rod trav.mm : 8.50...8.60
2nd speed 1/min : 750
C-rod trav.mm : 7.60...7.70
3rd speed 1/min : 500
C-rod trav.mm : 7.00...7.20
4th speed 1/min : 350
C-rod trav.mm : 7.00...7.20

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 750
Del.quantity cm3/ : 122.0...128.0
1000H.: (119.0...131.0)
Speed 1/min : 500
Del.quantity cm3/ : 69.0...75.0
1000H.: (66.0...78.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 7.50
Speed 1/min : 1205...1215

STARTING FUEL DELIVERY

Speed 1/min : 100

K09

Del.quantity cm3/ : 140.0...160.0
1000H.: (136.0...164.0)

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 3.30...3.50
Del.quantity cm3/ : 18.0...24.0
1000H.: (15.0...27.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:
Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 L10
 Edition : 09.03.87
 Superceeded : 11.85
 Calibrating oil : ISO-4113
 Combination no. : 0 402 046 299
 Injection pump
 Pump designation : PES6P110A82OLS442
 EP type number : 0 412 016 060
 Governor
 Governor design. : RQ250/950PA483-3
 Governor no. : 0 421 801 363

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM407

1st version kW : 147.0
 Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing⁰CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 950

Contr.-rod trav.mm: 11.40...11.50

Del.quantity cm3/ : 11.0...11.2
 100H.: (10.7...11.5)

Dispersion cm3/ : 0.4
 100H.: (0.8)

2nd speed 1/min: 250
 Contr.-rod trav. m: 8.40...8.60
 Del.quantity cm3/ : 1.4...2.0
 100H.: (1.1...2.2)
 Dispersion cm3/ : 0.4
 100H.: (0.7)

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 600
 Contr.-rod travelmm: 13.00...14.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 950
 Del.quantity cm3/ : 110.0...112.0
 1000H.: (107.0...115.0)
 Dispersion cm3/ : 4.00
 1000H.: (8.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 36...44

Setting point:
 Speed 1/min : 600
 Contr.-rod trav.mm: 13.5

Testing:
 1st c-rod trav.mm : 10.40
 Speed 1/min : 995...1010

2nd c-rod trav.mm : 4.00
Speed 1/min : 1040...1070
4th speed 1/min : 1150
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring
Speed 1/min : 250
Contr.-rod trav.mm: 8.1

Testing:

Speed 1/min : 100
C-rod trav.mm min : 9.70
Speed 1/min : 250
C-rod trav.mm : 8.10
C-rod trav.mm : 2.00
Speed 1/min : 330...370

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 97.0...101.0
1000H.: (94.0...104.0)
Dispersion cm3/ : 6.00
1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.40
Speed 1/min : 995...1010

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 140.0...160.0
1000H.: (136.0...164.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 L3
 Edition : 09.03.87
 Superceeded : 11.85
 Calibrating oil : ISO-4113
 Combination no. : 0 402 046 301
 Injection pump
 Pump designation : PES6P110A820LS442
 EP type number : 0 412 016 060
 Governor
 Governor design. : RQV300...1100PAS94-3
 Governor no. : 0 421 813 324

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : 407 STEHEND

1st version kW : 162.0
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 10.90...11.00

Del.quantity cm3/ : 11.3...11.5

100H.: (11.0...11.8)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300

Contr.-rod trav. m: 8.00...8.20

Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.2)

Dispersion cm3/ : 0.4

100H.: (0.7)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1100

Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 113.0...115.0

1000H.: (110.0...118.0)

Dispersion cm3/ : 4.00

1000H.: (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 9.90

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1175...1205

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 28...36

Testing:

Speed 1/min : 100

C-rod trav.mm min : 9.70

Speed 1/min : 300

C-rod trav.mm : 8.00...8.20

CONSTANT REGULATION

Speed 1/min : 320...450

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600

Del.quantity cm3/ : 90.0...94.0

1000H.: (87.0...97.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.90

Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 9,8 A5
 Edition : 09.03.87
 Superceeded : 7.84
 Calibrating oil : ISO-4113
 Combination no. : 0 402 046 303
 Injection pump
 Pump designation : PES6P120A320RS419
 EP type number : 0 412 026 037
 Governor
 Governor design. : RQV275...1100PA495-7
 Governor no. : 0 421 813 449

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045

1st version kW : 157.0
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 10.00...11.00

BASIC SETTING

1st speed 1/mi: 1100

 Contr.-rod trav.mm: 7.80...7.90

 Del.quantity cm3/ : 13.2...13.4

 100H.: (12.9...13.7)

 Dispersion cm3/ : 0.5

 100H.: (0.9)

2nd speed 1/min: 275
 Contr.-rod trav. m: 4.60...4.80
 Del.quantity cm3/ : 1.7...2.3
 100H.: (1.4...2.6)
 Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 275
 Sleeve travel mm: 1.30...1.50
 2nd speed 1/min: 450
 Sleeve travel mm: 3.30...3.70
 3rd speed 1/min: 850
 Sleeve travel mm: 6.00...6.20
 4th speed 1/min: 1100
 Sleeve travel mm: 7.70...7.90

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1175
 Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1100
 Charge press. hPa : 700

Del.quantity cm3/ : 132.0...134.0
1000H.: (129.0...137.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 60...68

Testing:

1st c-rod trav.mm : 6.80
Speed 1/min : 1185...1195
2nd c-rod trav.mm : 4.00
Speed 1/min : 1220...1250
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 5...13
Speed 1/min : 275
C-rod trav.mm : 3.40...3.60
Speed 1/min : 200
C-rod trav.mm max : 5.50

CONSTANT REGULATION

Speed 1/min : 285...405

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 700
Contr.-rod trav.mm: 7.80...7.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 7.30...7.40
2nd pressure hPa : 145
C-rod trav.mm : 7.50...7.60

SWITCH-OVER POINT

Speed 1/min : 195 (215)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700
Speed 1/min : 700
Del.quantity cm3/ : 120.0...126.0
1000H.: (117.0...129.0)
Charge press. hPa : -
Speed 1/min : 500

Del.quantity cm3/ : 88.0...90.0
1000H.: (85.0...93.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 6.80
Speed 1/min : 1185...1195

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 150.0...170.0
1000H.: (146.0...174.0)

LOW IDLE

Speed 1/min : 275
Contr.-rod trav.mm: 3.40...3.60

Start-of-delivery mark 11.5° cam angle
after start of delivery cyl. 1

APPLICATION

Special-purpose vehicle

Note inst. in remarks column

TEST BENCH REQUIREMENTS

START OF DELIVERY
Test pressure, bar: 25...27

Dispersion cm3/ : 5.00
1000H : (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 48...56

Testing:

1st c-rod trav.mm : 9.70

Speed 1/min : 990...1000

2nd c-rod trav.mm : 4.00

Speed 1/min : 1050...1080

4th speed 1/min : 1200

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 15...23

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.30

Speed 1/min : 250

C-rod trav.mm : 5.70...5.90

CONSTANT REGULATION

Speed 1/min : 250...540

SWITCH-OVER POINT

Speed 1/min : 170 (190)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.70

Speed 1/min : 990...1000

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...170.0

1000H.: (-)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 I3
Edition : 09.03.87
Superceeded : 7.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 727

Injection pump
Pump designation : PES6P120A82D
LS3077-10
EP type number : 0 412 026 714
Governor
Governor design. : RQ300/1100PA603
Governor no. : 0 421 801 153

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM407 HA

1st version kW : 206.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values _____

START OF DELIVERY

Test pressure, bar: 25...27

```

Prestroke mm      : 4.00...4.10
                  : (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 6- 2- 4- 1-

```

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + -^o: 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav,mm: 11.70...11.80

Del.quantity cm3/ : 18.4...18.6

100H.: (18.1...18.9)

Dispersion cm³/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300
Contr.-rod trav. m: 5.00...5.20
Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.3)

Dispersion cm³/ : 0.8
100H.: (1.2)

SLEEVE POSITION

Control-lever position

Degree: -2

Speed 17/min: 650

Cont.-rod travelmm: 19.10...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

```

1st version
Speed      1/min: 1100
Charge press. hPa : 750
Del.quantity cm3/ : 184.0...186.0
            1000H.: (181.0...189.0)
Dispersion cm3/ : 5.00
            1000H.: (9.00)

```

1000H.: (181.0...189.0)

cm³/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

Setting point:
Speed 1/min : 650
Contr.-rod trav.mm: 19.9

Testing:

1st c-rod trav.mm : 10.70
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00
Speed 1/min : 1190...1220
4th speed 1/min : 1260
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 5.1

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.50
Speed 1/min : 300
C-rod trav.mm : 5.10
C-rod trav.mm : 2.00
Speed 1/min : 355...395

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100
C-rod trav.mm : 11.70...11.80
2nd speed 1/min : 600
C-rod trav.mm : 12.30...12.40
3rd speed 1/min : 950
C-rod trav.mm : 12.00...12.20

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500
Pressure hPa : 750
Contr.-rod trav.mm: 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 10.30...10.40
2nd pressure hPa : 530
C-rod trav.mm : 11.70...11.80
3rd pressure hPa : 420
C-rod trav.mm : 10.80...11.00

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Charge press. hPa : 750
Speed 1/min : 600
Del.quantity cm3/ : 187.0...193.0
1000H.: (184.0...196.0)
Dispersion cm3/ : -
1000H.: 12.00
Speed 1/min : 500

Del.quantity cm3/ : 145.0...147.0
1000H.: (142.0...150.0)
Dispersion cm3/ : -
1000H.: 12.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.70
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 175.0...195.0
1000H.: (171.0...199.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,7 A1
Edition : 09.03.87
Superceeded : 5.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 750

Injection pump
Pump designation : PES6P110A82OLS3131
EP type number : 0 412 016 715
Governor
Governor design. : RQ300/1100PA722
Governor no. : 0 421 801 264

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 150.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...110

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 9.40...9.50

Del.quantity cm3/ : 11.0...11.2

100H.: (10.7...11.4)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300

Contr.-rod trav. m: 7.20...7.40

Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.2)

Dispersion cm3/ : 0.4

100H.: (0.8)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 600

Contr.-rod travelmm: 13.00...14.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Charge press. hPa : -

Del.quantity cm3/ : 110.0...112.0

1000H.: (107.5...114.5)

Dispersion cm3/ : 4.00

1000H.: (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 97...103

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 13.5

Testing:

1st c-rod trav.mm : 8.40

Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00
Speed 1/min : 1195...1225
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever
position degrees: 75...81
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 7.3

Testing:

Speed 1/min : 100
C-rod trav.mm min : 8.80
Speed 1/min : 300
C-rod trav.mm : 7.30
C-rod trav.mm : 2.00
Speed 1/min : 380...420

TORQUE CONTROL

Dimension a mm : 0.50
Torque-control curve - 1st version
1st speed 1/min : 1100
C-rod trav.mm : 9.40...9.50
2nd speed 1/min : 500
C-rod trav.mm : 10.20...10.40
3rd speed 1/min : 850
C-rod trav.mm : 9.80...10.10
4th speed 1/min : 950
C-rod trav.mm : 9.60...9.80

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : -
Speed 1/min : 500
Del. quantity cm3/ : 96.0...100.0
1000H.: (93.0...103.0)
Dispersion cm3/ : 6.00
1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.40
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del. quantity cm3/ : 130.0...150.0
1000H.: (126.0...154.0)

Remarks:

K21

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,7 A3
Edition : 09.03.87
Superceeded : 7.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 751

Injection pump
Pump designation : PES6P110A820LS3131
EP type number : 0 412 016 715
Governor
Governor design. : RQ300/1100PA723-
Governor no. : 0 421 801 265

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...110

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - ^o : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 14.0...14.2

100H.: (13.7...14.5)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300
Contr.-rod trav. m: 7.10...7.30
Del.quantity cm3/ : 1.4...2.0
100H.: (1.1...2.3)
Dispersion cm3/ : 0.4
100H.: (0.7)

SLEEVE POSITION

Control-lever position
Degree: -2
Speed 1/min: 550
Contr.-rod travelmm: 14.70...16.40

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1100
Del.quantity cm3/ : 140.0...142.0
1000H.: (137.0...145.0)
Dispersion cm3/ : 4.00
1000H.: (8.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 94...100

Setting point:
Speed 1/min : 550
Contr.-rod trav.mm: 15.5

Testing:
1st c-rod trav.mm : 10.20
Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00
Speed 1/min : 1180...1210
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever
position degrees: 73...79
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 7.2

Testing:

Speed 1/min : 100
C-rod trav.mm min : 8.80
Speed 1/min : 300
C-rod trav.mm : 7.30
C-rod trav.mm : 2.00
Speed 1/min : 360...400

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 117.0...121.0
1000H.: (114.0...124.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.20
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 130.0...150.0
1000H.: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11.4 I9
Edition : 30.03.87
Superceeded : 4.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 752

Injection pump
Pump designation : PES6P120A820
LS3077-10
EP type number : 0 412 026 714
Governor
Governor design. : RQ250/950PA585-3
Governor no. : 0 421 801 266

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM407A

```
1st version kW : 202.0
Speed      1/min: 1900
```

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values

START OF DELIVERY

Test pressure, bar: 25...27

```
Prestroke mm      : 4.00...4.10
                  : (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 6- 2- 4- 1- 5- 3
```

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - ^o: 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 950

Contr.-rod trav.mm: 11.60...11.70

Del.quantity cm3/ : 18.3...18.5
100H.: (18.0...18.8)

Dispersion cm³/ : 0.5

100H.: (0.9)

```

2nd speed      1/min: 250
Contr.-rod trav. m: 5.30...5.50
Del.quantity   cm3/ : 1.4...2.0
                100H.: (1.1...2.3)
Dispersion     cm3/ : 0.8
                100H.: (1.2)

```

SLEEVE POSITION

```
Control-lever position
Degree: -2
Speed      17/min: 650
Cont.-rod travelmm: 19.20...20.80
```

FULL-LOAD DELIV. AT FULL-LOAD STOP

```

1st version
Speed      1/min: 950
Charge press. hPa : 700
Del.quantity cm3/ : 183.0...185.0
            1000H.: (180.0...188.0)
Dispersion cm3/ : 5.00
            1000H.: (9.00)

```

HIGHEST RATED SPEED

```
1st version
Control-lever
position degrees: 28...36
```

Setting point:
Speed 1/min : 650

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.60
Speed 1/min : 995...1010
2nd c-rod trav.mm : 4.00
Speed 1/min : 1030...1060
4th speed 1/min : 1150
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever
position degrees: 7...15
Setting point w/out aux. spring
Speed 1/min : 250
Contr.-rod trav.mm: 5.4

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.10
Speed 1/min : 250
C-rod trav.mm : 5.40
C-rod trav.mm : 2.00
Speed 1/min : 270...330

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : -
Contr.-rod trav.mm: -

Measurement

Speed 1/min : 500
1st pressure hPa : 270
C-rod trav.mm : 0.40...0.60

SWITCH-OVER POINT

Speed 1/min : 170 (190)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700
Speed 1/min : 600
Del.quantity cm3/ : 177.0...183.0
1000H.: (174.0...186.0)
Dispersion cm3/ : 8.0
1000H.: (12.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 144.0...146.0
1000H.: (141.0...149.0)
Dispersion cm3/ : 8.00
1000H.: (-)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.60
Speed 1/min : 995...1010

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 160.0...180.0
1000H.: (156.0...184.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 12,0 F1
Edition : 31.07.87
Superceeded : 4.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump
Pump designation : PES6P120A32ORS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...950PA728-1
Governor no. : 0 421 813 465

Customer-spec. information
Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0
Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 10.00...11.00

BASIC SETTING

1st speed 1/mi: 950

Contr.-rod trav.mm: 12.50...12.60

Del.quantity cm3/ : 23.0...23.2

100H.: (22.7...23.5)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 275.0

Contr.-rod trav. m: 5.40...5.60

Del.quantity cm3/ : 2.0...2.6

100H.: (1.7...2.9)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.00...1.20

2nd speed 1/min: 450

Sleeve travel mm: 3.30...3.80

3rd speed 1/min: 800

Sleeve travel mm: 5.80...6.00

4th speed 1/min: 950

Sleeve travel mm: 6.80...6.90

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1140

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 950

Charge press. hPa : 1000

Del.quantity cm3/ : 230.0...232.0
1000H.: (227.0...235.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 59...67

Testing:

1st c-rod trav.mm : 11.50

Speed 1/min : 1020...1030

2nd c-rod trav.mm : 4.00

Speed 1/min : 1155...1185

4th speed 1/min : 1250

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 8...16

Speed 1/min : 275

C-rod trav.mm : 5.40...5.60

Speed 1/min : 200

C-rod trav.mm max : 7.00

CONSTANT REGULATION

Speed 1/min : 300...400

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1000

Contr.-rod trav.mm: 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.40...9.50

2nd pressure hPa : 500

C-rod trav.mm : 11.70...11.80

3rd pressure hPa : 200

C-rod trav.mm : 9.80...10.40

SWITCH-OVER POINT

Speed 1/min : 195 (215)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000

Speed 1/min : 600

Del.quantity cm3/ : 235.0...241.0

1000H.: (232.0...244.0)

Charge press. hPa : -
Speed 1/min : 950
Del.quantity cm3/ : 149.0...151.0
1000H.: (146.0...154.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 11.50
Speed 1/min : 1020...1030

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 140.0...160.0
1000H.: (136.0...164.0)

LOW IDLE

Speed 1/min : 275
Contr.-rod trav.mm: 5.40...5.60
Del.quantity cm3/ : 20.0...26.0
1000H.: (17.0...29.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 N
Edition : 18.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113
Combination no. : 0 402 046 759
Injection pump
Pump designation : PES6P110A72ORS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQ900PA738
Governor no. : 0 421 801 278

Customer-spec. information
Customer : KHD

Engine : BF6L413FR/C

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,80...2,90
: (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0,50 (0,75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 850

Contr.-rod trav.mm: 12,60...12,70

Del.quantity cm3/ : 14,7...14,9

100H.: (14,4...15,2)

Dispersion cm3/ : 0,40

100H.: (0,75)

2nd speed 1/min: 300
Contr.-rod trav. m: 7,10...7,30
Del.quantity cm3/ : 1,3...1,9
100H.: (1,0...2,1)
Dispersion cm3/ : 0,45
100H.: (0,75)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 850
Charge press. hPa : -
Del.quantity cm3/ : 147,0...149,0
1000H.: (144,0...152,0)
Dispersion cm3/ : 4,0
1000H.: (7,5)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 37...45

Testing:
1st c-rod trav.mm : 11,60
Speed 1/min : 900...905
2nd c-rod trav.mm : 5,50
Speed 1/min : 936...945
4th speed 1/min : 1050
C-rod trav.mm : 0,00...1,00

SWITCH-OVER POINT

Speed 1/min : 750

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 11,60

Speed 1/min : 900...905

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 170,0...200,0
1000H.: (-)

Remarks:
APPLICATION
Generator set

Speed 1/min : 1140...1155
2nd c-rod trav.mm : 4.00
Speed 1/min : 1200...1230
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever
position degrees: 11...19
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 7.3

Testing:

Speed 1/min : 100
C-rod trav.mm min : 8.80
Speed 1/min : 300
C-rod trav.mm : 7.30
C-rod trav.mm : 2.00
Speed 1/min : 360...400

TORQUE CONTROL

Dimension a mm : 0.50
Torque-control curve - 1st version
1st speed 1/min : 1100
C-rod trav.mm : 9.60...9.70
2nd speed 1/min : 600
C-rod trav.mm : 10.30...10.60

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : -
Speed 1/min : 600
Del.quantity cm3/ : 98.0...101.0
1000H.: (95.0...104.0)
Dispersion cm3/ : 6.00
1000H.: (9.00)

SETTING CONTROL-ROD STOP

Speed 1/min : 500

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than
full-load trav.mm: 8.60
Speed 1/min : 1140...1155

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 130.0...150.0
1000H.: (126.0...154.0)

Remarks:

L05

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 D
Edition : 09.03.87
Superceeded : 4.86
Calibrating oil : ISO-4113

Combination no. : 0 402 046 769

Injection pump
Pump designation : PES6P120A720LS3167
EP type number : 0 412 026 720
Governor
Governor design. : RQV300...1100PA667-2
Governor nc. : 0 421 813 524

Customer-spec. information
Customer : MAN

Engine : D2866LE

1st version kW : 300.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 12.60...12.70

Del.quantity cm³/ : 23.4...23.6

100H.: (23.1...23.9)

Dispersion cm³/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm³/ : 1.7...2.3

100H.: (1.4...2.6)

Dispersion cm³/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1.20...1.40

2nd speed 1/min: 500

Sleeve travel mm: 3.30...3.50

3rd speed 1/min: 900

Sleeve travel mm: 5.90...6.20

4th speed 1/min: 1100

Sleeve travel mm: 7.60...7.80

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1175

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm³/ : 234.0...236.0

1000H.: (231.0...239.0)

Dispersion cm³/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 49...57

Testing:

1st c-rod trav.mm : 11.60

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1245...1275

4th speed 1/min : 1400

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 13...21

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.50

Speed 1/min : 300

C-rod trav.mm : 5.90...6.10

CONSTANT REGULATION

Speed 1/min : 330...445

SWITCH-OVER POINT

Speed 1/min : 220 (240)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.60

Speed 1/min : 1140...1150

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm³/ : 200.0...220.0

1000H.: (196.0...224.0)

LOW IDLE

Speed 1/min : 300

Contr.-rod trav.mm: 5.90...6.10

Del.quantity cm³/ : 17.0...23.0

1000H.: (14.0...26.0)

Dispersion cm³/ : 8.00

1000H.: (12.00)

Remarks:

: MAN-NR. 2-7656

APPLICATION
Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ROL 12,2 H1
 Edition : 09.03.87
 Superceeded : 9.86
 Calibrating oil : ISO-4113
 Combination no. : 0 402 046 772
 Injection pump
 Pump designation : PES6P120A32ORS3170
 EP type number : 0 412 026 722
 Governor
 Governor design. : RQV250...950PA794-1
 Governor no. : 0 421 813 579

Customer-spec. information
 Customer : ROLLS ROYCE

Engine : EAGLE LE

1st version kW : 204.0
 Speed 1/min: 1900

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 1- 4- 2- 6- 3- 5

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 900

Contr.-rod trav.mm: 12.90...13.00

Del.quantity cm3/ : 21.5...21.7
 100H.: (21.2...22.0)

Dispersion cm3/ : 0.5
 100H.: (0.9)

2nd speed 1/min: 250
 Contr.-rod trav. m: 5.50...5.70
 Del.quantity cm3/ : 1.7...2.3
 100H.: (1.4...2.6)
 Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250
 Sleeve travel mm: 1.50...1.70
 2nd speed 1/min: 350
 Sleeve travel mm: 2.20...2.70
 3rd speed 1/min: 500
 Sleeve travel mm: 3.00...3.40
 4th speed 1/min: 1000
 Sleeve travel mm: 8.00...8.20
 5th speed 1/min: 1060
 Sleeve travel mm: 8.90...9.20

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1000
 Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 900
 Charge press. hPa : 700
 Del.quantity cm3/ : 215.0...217.0
 1000H.: (212.0...220.0)

Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...58

Testing:

1st c-rod trav.mm : 11.90

Speed 1/min : 990...1000

2nd c-rod trav.mm : 4.00

Speed 1/min : 1055...1085

4th speed 1/min : 1200

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 15...23

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.00

Speed 1/min : 250

C-rod trav.mm : 5.50...5.70

CONSTANT REGULATION

Speed 1/min : 250...470

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 12.90...13.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 11.70...11.90

2nd pressure hPa : 330

C-rod trav.mm : 12.00...12.10

3rd pressure hPa : 510

C-rod trav.mm : 12.60...12.80

SWITCH-OVER POINT

Speed 1/min : 170 (190)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700

Speed 1/min : 500

Del.quantity cm3/ : 200.0...206.0

1000H.: (197.0...209.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 170.0...174.0

1000H.: (167.0...177.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.90

Speed 1/min : 990...1000

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...170.0

1000H.: (136.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,7 A 9
Edition : 02.12.86
Superceeded : 12.85
Calibrating oil : ISO-4113

Combination no. : 0 402 046 773

Injection pump
Pump designation : PES6P110A820LS3131
EP type number : 0 412 016 715
Governor
Governor design. : RQ300/1100PA800-
Governor no. : 0 421 801 347

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 13.9...14.1

100H.: (13.6...14.3)

Dispersion cm3/ : 0.4

100H.: (0.8)

2nd speed 1/min: 300

Contr.-rod trav. m: 7.20...7.40

Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.3)

Dispersion cm3/ : 0.4

100H.: (0.8)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 600

Contr.-rod travelmm: 13.00...14.00

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 139.0...141.0

1000H.: (136.5...143.5)

Dispersion cm3/ : 4.00

1000H.: (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 99...105

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 13.5

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1140...1155

2nd c-rod trav.mm : 4.00
Speed 1/min : 1185...1215
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.50

LOWEST RATED SPEED I

Control-lever

position degrees: 76...82

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 7.3

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.80

Speed 1/min : 300

C-rod trav.mm : 7.30

C-rod trav.mm : 2.00

Speed 1/min : 380...420

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600

Del.quantity cm3/ : 116.0...119.0

1000H.: (113.0...122.0)

Dispersion cm3/ : -

1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1140...1155

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 T
Edition : 20.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113
Combination no. : 0 402 046 774
Injection pump
Pump designation : PES6P110A72ORS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV300...1150PA801
Governor no. : 0 421 813 537

Customer-spec. information
Customer : KHD

Engine : BF6LS13R

1st version kW : 177.0
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Prestroke mm : 2,80...2,90
 : (2,75...2,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 13,40...13,50

Del.quantity cm3/ : 15,1...15,3

100H.: (14,8...15,6)

Dispersion cm3/ : 0,40

100H.: (0,75)

2nd speed 1/min: 300

Contr.-rod trav. m: 7,90...8,10

Del.quantity cm3/ : 1,6...2,2

100H.: (1,3...2,4)

Dispersion cm3/ : 0,40

100H.: (0,75)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1,30...1,40

2nd speed 1/min: 390

Sleeve travel mm: 2,40...2,70

3rd speed 1/min: 460

Sleeve travel mm: 2,80...3,20

4th speed 1/min: 1190

Sleeve travel mm: 8,40...8,50

5th speed 1/min: 1290

Sleeve travel mm: 9,40...9,70

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1190

Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Charge press. hPa : 900

Del.quantity cm3/ : 151,0...153,0

1000H.: (148,0...156,0)

Dispersion cm3/ : 4,0

1000H.: (7,5)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 51...59

Testing:

1st c-rod trav.mm : 12,40

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4,00

Speed 1/min : 1310...1340

4th speed 1/min : 1400

C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever

position degrees: 16...24

Testing:

Speed 1/min : 100

C-rod trav.mm min : 9,40

Speed 1/min : 300

C-rod trav.mm : 7,90...8,10

CONSTANT REGULATION

Speed 1/min : 320...480

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 450

Pressure hPa : 900

Contr.-rod trav.mm: 13,60...13,70

Measurement

Speed 1/min : 450

1st pressure hPa : -

C-rod trav.mm : 12,50...12,70

2nd pressure hPa : 420

C-rod trav.mm : 13,20...13,30

3rd pressure hPa : 360

C-rod trav.mm : 12,70...12,90

SWITCH-OVER POINT

Speed 1/min : 250 (270)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 450

Del.quantity cm3/ : 123,0...125,0

1000H.: (120,0...128,0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12,40

Speed 1/min : 1190...1200

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 170,0...200,0

1000H.: (166,0...204,0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 H
Edition : 21.8.87
Superceeded : 9.86
Calibrating oil : ISO-4113
Combination no. : 0 402 046 777
Injection pump
Pump designation : PES6P120A72OLS3167
EP type number : 0 412 026 720
Governor
Governor design. : RQ750PA661-4
Governor no. : 0 421 801 361

Customer-spec. information
Customer : MAN

Engine : D2866TE

1st version kW : 190.0
Speed 1/min: 1500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8,00x2,50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3,80...3,90
: (3,75...3,95)
Contr.-rod trav.mm: 9,00...12,00
Cam sequence : 6-2-4-1-5-3

SD ang. spacing⁶CS: 0-60-120-180-240-300
Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 700
Contr.-rod trav.mm: 13,70...13,80
Del.quantity cm3/ : 23,1...23,3
100H.: (22,8...23,6)
Dispersion cm3/ : 0,50
100H.: (0,90)

2nd speed 1/min: 300
Contr.-rod trav. m: 7,50...7,70
Del.quantity cm3/ : 2,4...3,0
100H.: (2,1...3,3)
Dispersion cm3/ : 0,80
100H.: (1,20)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 700
Del.quantity cm3/ : 231,0...233,0
1000H.: (228,0...236,0)
Dispersion cm3/ : 5,00
1000H.: (9,00)

HIGHEST RATED SPEED

Testing:
1st c-rod trav.mm : 12,70
Speed 1/min : 750...755
2nd c-rod trav.mm : 4,00
Speed 1/min : 802...815
4th speed 1/min : 950
C-rod trav.mm : 0,00...1,00

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 12,70
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 175,0...195,0
1000H.: (171,0...199,0)

Remarks: : MAN-NR. 2-7775

APPLICATION
Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ROL 12,2 I
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 046 778

Injection pump
Pump designation : PES6P120A320RS3170-1
EP type number : 0 412 026 726
Governor
Governor design. : RQ900PA826
Governor no. : 0 421 801 365

Customer-spec. information
Customer : ROLLS ROYCE

Engine : EAGLE LE

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00

L17

Cam sequence : 1- 4- 2- 6- 3- 5

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 850

Contr.-rod trav.mm: 13.10...13.20

Del.quantity cm3/ : 21.9...22.1

100H.: (21.6...22.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm3/ : 1.7...2.3

100H.: (1.4...2.6)

Dispersion cm3/ : 0.8

100H.: (1.2)

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 850

Del.quantity cm3/ : 219.0...221.0

1000H.: (216.0...224.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

Testing:

1st c-rod trav.mm : 12.10

Speed 1/min : 900...905

2nd c-rod trav.mm : 4.00

Speed 1/min : 936...951

4th speed 1/min : 1000

C-rod trav.mm : 0.00...1.00

SWITCH-OVER POINT

Speed 1/min : 850

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.10

Speed 1/min : 900...905

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 140.0...160.0
1000H.: (136.0...164.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SSC 10,5 D
Edition : 17.12.86
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 046 780
Injection pump
Pump designation : PES6P130A320LS3180
EP type number : 0 412 036 703
Governor
Governor design. : RQV300...750PA614
Governor no. : 0 421 813 316

Customer-spec. information
Customer : SSCM

Engine : UD25-L6

1st version kW : 368.0
Speed 1/min: 1500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 060

Outside diameter
x Wall thickness
x Length mm : 8.00x2.00x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 13.90...14.00

Del.quantity cm3/ : 45.2...45.5

100H.: (45.8...46.8)

Dispersion cm3/ : 0.6

100H.: (1.0)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 4.5...4.7

Del.quantity cm3/ : 1.7...2.3

100H.: (1.3...2.7)

Dispersion cm3/ : 1.0

100H.: (1.4)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1.30...1.50

2nd speed 1/min: 600

Sleeve travel mm: 5.30...5.80

3rd speed 1/min: 750

Sleeve travel mm: 7.80...8.30

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 780

Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 750

Del.quantity cm3/ : 452.0...455.0

1000H.: (458.5...468.5)

Dispersion cm3/ : 6.00

1000H.: (10.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 62...70

Testing:

1st c-rod trav.mm : 12.90
Speed 1/min : 790...800
2nd c-rod trav.mm : 4.00
Speed 1/min : 850...880
4th speed 1/min : 1000
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 7...15

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.10
Speed 1/min : 300
C-rod trav.mm : 5.20...5.40

CONSTANT REGULATION

Speed 1/min : 325...435

SWITCH-OVER POINT

Speed 1/min : 220 (240)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.90
Speed 1/min : 790...800

STARTING FUEL DELIVERY

Del.quantity cm³/ : 390.0...420.0
1000H.: (386.0...424.0)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : UNI 9.5 B
Edition : 24.8.87
Superceeded : 10.86
Calibrating oil : ISO-4113

Combination no. : 0 402 046 782

Injection pump
Pump designation : PES6P110A72ORS3140
EP type number : 0 412 016 716
Governor
Governor design. : RQV275...1150PA841
Governor no. : 0 421 813 586

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8460.21.002

1st version kW : 177.0
Speed 1/min: 2300

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 13.8...14.1

100H.: (13.5...14.3)

Dispersion cm3/ : 0.40

100H.: (0.75)

2nd speed 1/min: 275
Contr.-rod trav. m: 6.80...7.00
Del.quantity cm3/ : 1.7...2.2
100H.: (1.4...2.4)
Dispersion cm3/ : 0.45
100H.: (0.75)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 250
Sleeve travel mm: 1.00...1.20
2nd speed 1/min: 400
Sleeve travel mm: 2.70...3.00
3rd speed 1/min: 850
Sleeve travel mm: 5.00...5.20
4th speed 1/min: 1150
Sleeve travel mm: 7.30...7.50

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1260
Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1150
Charge press. hPa : 700
Del.quantity cm3/ : 138.0...141.0
100H.: (135.5...143.5)
Dispersion cm3/ : 4.00
100H.: (7.50)

HIGHEST RATED SPEED

1st version

Control-lever
position degrees: 60...68

Testing:
1st c-rod trav.mm : 10.00
Speed 1/min : 1190...1200
2nd c-rod trav.mm : 4.00
Speed 1/min : 1275...1305
4th speed 1/min : 1400
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 11...19

Testing:
Speed 1/min : 100
C-rod trav.mm min : 8.40
Speed 1/min : 275
C-rod trav.mm : 6.80...7.00

CONSTANT REGULATION

Speed 1/min : 275...520

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 700
Contr.-rod trav.mm: 11.00...11.10

Measurement

Speed 1/min : 500
1st pressure hPa : -
C-rod trav.mm : 10.50...10.60
2nd pressure hPa : 290
C-rod trav.mm : 10.70...10.80

SWITCH-OVER POINT

Speed 1/min : 210 (230)

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 500
Del.quantity cm3/ : 121.0...124.0
1000H.: (118.5...126.5)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.00
Speed 1/min : 1190...1200

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 120.0...140.0
1000H.: (116.0...144.0)

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9.6 V
Edition : 03.04.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 046 787
Injection pump
Pump designation : PES6P110A72ORS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV375...1000PA862
Governor no. : 0 421 813 625

Customer-spec. information
Customer : KHD

Engine : BF6L513R

1st version kW : 156.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Contr.-rod trav. mm: 9.00...12.00
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 1000
Contr.-rod trav. mm: 13.20...13.30
Del. quantity cm3/ : 13.9...14.1
100H.: (13.6...14.4)
Dispersion cm3/ : 0.4
100H.: (0.7)
2nd speed 1/min: 375.0
Del. quantity cm3/ : 1.6...2.2
100H.: (1.3...2.4)
Dispersion cm3/ : 0.4
100H.: (0.7)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 375
Sleeve travel mm: 0.90...1.10
2nd speed 1/min: 410
Sleeve travel mm: 1.60...1.90
3rd speed 1/min: 550
Sleeve travel mm: 2.80...3.10
4th speed 1/min: 1050
Sleeve travel mm: 8.50...8.60
5th speed 1/min: 1110
Sleeve travel mm: 9.50...9.80

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1050
Contr.-rod travel mm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1000
Del. quantity cm3/ : 139.0...141.0
1000H.: (136.0...144.0)
Dispersion cm3/ : 4.00
1000H.: (7.50)

HIGHEST RATED SPEED

1st version

Control-lever
position degrees: 51...59

Testing:

1st c-rod trav.mm : 12.20
Speed 1/min : 1040...1050
2nd c-rod trav.mm : 4.00
Speed 1/min : 1090...1120
4th speed 1/min : 1250
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: ?

Testing:

Speed 1/min : 100
C-rod trav.mm min : 1.50
Speed 1/min : 375
C-rod trav.mm : ?

CONSTANT REGULATION

Speed 1/min : 375...480

TORQUE CONTROL

Dimension a mm : 0.20
Torque-control curve - 1st version
1st speed 1/min : 1000
C-rod trav.mm : 13.20...13.30
2nd speed 1/min : 650
C-rod trav.mm : 13.40...13.50
3rd speed 1/min : 825
C-rod trav.mm : 13.30...13.40

SWITCH-OVER POINT

Speed 1/min : 310 (330)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 650
Del.quantity cm3/ : 146.0...150.0
1000H.: (143.0...153.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.20
Speed 1/min : 1040...1050

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 170.0...200.0
1000H.: (166.0...204.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 14,9 H
Edition : 10.08.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 048 705

Injection pump
Pump designation : PES8P120A32ORS3199
EP type number : 0 412 028 705
Governor
Governor design. : RQV275...1050PA665
Governor no. : 0 421 813 370

Customer-spec. information
Customer : RVI

Engine : MIVR083530

1st version kW : 320.0
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 8- 4- 2- 7- 3- 6-
 5

SD ang. spacing°CS: 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 1050

Contr.-rod trav.mm: 11.40...11.50

Del.quantity cm3/ : 20.2...20.4

100H.: (19.9...20.7)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 275.0

Contr.-rod trav. m: 3.8...4.00

Del.quantity cm3/ : 1.7...2.3

100H.: (1.4...2.6)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 275

Sleeve travel mm: 1.40...1.60

2nd speed 1/min: 450

Sleeve travel mm: 3.40...3.80

3rd speed 1/min: 800

Sleeve travel mm: 5.60...6.00

4th speed 1/min: 1050

Sleeve travel mm: 7.50...7.70

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1140

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1050

Charge press. hPa : 700

Del.quantity cm3/ : 202.0...204.0

1000H.: (199.0...207.0)

Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 62...70

Testing:

1st c-rod trav.mm : 10.40

Speed 1/min : 1115...1135

2nd c-rod trav.mm : 4.00

Speed 1/min : 1220...1250

4th speed 1/min : 1350

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Testing:

Speed 1/min : 200

C-rod trav.mm min : 5.60

Speed 1/min : 275

C-rod trav.mm : 3.80...4.00

CONSTANT REGULATION

Speed 1/min : 280...405

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 8.70...8.90

2nd pressure hPa : 420

C-rod trav.mm : 10.60...10.70

3rd pressure hPa : 360

C-rod trav.mm : 9.40...9.60

SWITCH-OVER POINT

Speed 1/min : 195 (215)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700

Speed 1/min : 650

Del.quantity cm3/ : 187.0...193.0

1000H.: (184.0...196.0)

Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 110.0...112.0
1000H.: (107.0...115.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.40
Speed 1/min : 1115...1135

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 170.0...190.0
1000H.: (166.0...194.0)

LOW IDLE

Speed 1/min : 275
Contr.-rod trav.mm: 3.80...4.00
Del.quantity cm3/ : 17.0...23.0
1000H.: (14.0...26.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Start-of-delivery mark 13° cam angle
after start of delivery cyl. 1.

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.10

Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

SET IDLE AUXILIARY SPRING
Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 11.10
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 130.0...150.0
1000H.: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 L15
 Edition : 24.8.87
 Superceeded : 12.85
 Calibrating oil : ISO-4113

Combination no. : 0 402 076 055

Injection pump
 Pump designation : PES6P110A820LS442-1
 EP type number : 0 412 016 063
 Governor
 Governor design. : RSV300...1100POA485
 -2
 Governor no. : 0 421 833 207

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 407

1st version kW : 122.0
 Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Calibrating nozzle-holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY
 Test pressure, bar: 25...27

MOS

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1100

 Contr.-rod trav.mm: 9.50...9.60

 Del.quantity cm3/ : 9.4...9.6

 100H.: (9.1...9.8)

 Dispersion cm3/ : 0.4

 100H.: (0.8)

 2nd speed 1/min: 300
 Contr.-rod trav. m: 7.70...7.90
 Del.quantity cm3/ : 1.4...2.0
 100H.: (1.1...2.2)
 Dispersion cm3/ : 0.4
 100H.: (0.7)

SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed 1/min: 800
 Cont.-rod travelmm: 0.30...0.70

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 1100
 Del.quantity cm3/ : 94.0...96.0
 1000H.: (91.5...98.5)
 Dispersion cm3/ : 4.00
 1000H.: (8.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 50...58

Testing:
 1st c-rod trav.mm : 8.40
 Speed 1/min : 1130...1140
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 1170...1200
 4th speed 1/min : 1350

C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever

position degrees: 24...32

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 7.8

Speed 1/min : 300

C-rod trav.mm : 7.80

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 9.50...9.60

2nd speed 1/min : 600

C-rod trav.mm : 10.40...10.60

3rd speed 1/min : 750

C-rod trav.mm : 10.20...10.40

4th speed 1/min : 950

C-rod trav.mm : 9.60...9.80

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600

Del.quantity cm3/ : 86.0...90.0

1000H.: (83.0...93.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.40

Speed 1/min : 1130...1140

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 02
Edition : 13.05.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 076 717

Injection pump
Pump designation : PES6P120A82OLS
3095-10
EP type number : 0 412 026 715
Governor
Governor design. : RSV350...750P1A487-4
Governor no. : 0 421 833 265

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 169.0
Speed 1/min: 1500

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 730

Contr.-rod trav.mm: 12.40...12.50

Del.quantity cm3/ : 19.6...19.8
100H.: (19.3...20.1)

Dispersion cm3/ : 0.5
100H.: (0.8)

2nd speed 1/min: 350.0
Contr.-rod trav. m: 5.7...5.9
Del.quantity cm3/ : 3.0...4.0
100H.: (-)
Dispersion cm3/ : 0.8
100H.: (1.2)

SLEEVE POSITION

Control-lever position
Degree: -3
Speed 1/min: 700
Cont.-rod travelmm: 0.30...0.70

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 730
Del.quantity cm3/ : 196.0...198.0
1000H.: (193.0...201.0)
Dispersion cm3/ : 5.00
1000H.: (8.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 29...37

Testing:
1st c-rod trav.mm : 11.40
Speed 1/min : 750...755

2nd c-rod trav.mm : 4.00
Speed 1/min : 785...795
4th speed 1/min : 900
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Setting point w/out aux. spring
Speed 1/min : 350
Contr.-rod trav.mm: 5.8
Speed 1/min : 350
C-rod trav.mm : 5.80

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 11.40
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 170.0...190.0
1000H.: (166.0...194.0)

Remarks:
APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,4 Q 3
Edition : 10.12.86
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 076 721
Injection pump
Pump designation : PES6P120A820LS3112
-11
EP type number : 0 412 026 724
Governor
Governor design. : RSV350...1100POA485
-4
Governor no. : 0 421 833 240

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 165.0
Speed 1/min: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1,50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

BASIC SETTING

1st speed 1/mi: 1080

Contr.-rod trav.mm: 9.90...10.00

Del.quantity cm3/ : 14.1...14.3

100H.: (13.8...14.6)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350

Contr.-rod trav. m: 5.00...5.20

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload
Notch setting x : 4.50

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 1080
Del.quantity cm3/ : 141.0...143.0
1000H.: (138.0...146.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 49...57

Testing:

1st c-rod trav.mm : 8.90
Speed 1/min : 1130...1140
2nd c-rod trav.mm : 4.00
Speed 1/min : 1200...1230
4th speed 1/min : 1350
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever
position degrees: 26...34
Setting point w/out aux. spring
Speed 1/min : 350
Contr.-rod trav.mm: 5.1
Speed 1/min : 350
C-rod trav.mm : 5.10

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

FUEL-DELIVERY CHARACTERISTICS

Speed 1/min : 600
Del.quantity cm3/ : 142.0...146.0
1000H.: (139.0...149.0)
Dispersion cm3/ : 7.5
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 8.90
Speed 1/min : 1130...1140

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 150.0...170.0
1000H.: (146.0...174.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 28,8 B
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 618 800
Injection pump
Pump designation : PE8P120A500/SRS7110
EP type number : 0 412 628 810

Customer-spec. information
Customer : MWM

Engine : TBD234V16

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 2- 3- 4- 7- 8-
5- 6

SD ang. spacing°CS: 0-30-90-120-135-165-
225-255
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 800
Contr.-rod trav.mm: 14.90...15.00
Del.quantity cm3/ : 26.0...26.2
100H.: (25.7...26.5)
Dispersion cm3/ : 0.5
100H.: (0.9)

2nd speed 1/min: 300.0
Contr.-rod trav. m: 6.5...6.7
Del.quantity cm3/ : 3.0...4.0
100H.: (-)
Dispersion cm3/ : 0.6
100H.: (1.0)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 200.0...240.0
1000H.: (196.0...244.0)

Remarks:
Full-load delivery not known. Set
according to engine test report.

Pump runs in tandem

APPLICATION
Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 28,8 C
Edition : 02.06.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 618 801
Injection pump
Pump designation : PE8P120A500/SRS7144
EP type number : 0 412 628 821

Customer-spec. information
Customer : MWM

Engine : TBD234V16

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1- 2- 3- 4- 7- 8-
5- 6

SD ang. spacing°CS: 0-30-90-120-135-165-
225-255
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 800
Contr.-rod trav.mm: 14.90...15.00
Del.quantity cm3/ : 26.0...26.2
100H.: (25.7...26.5)
Dispersion cm3/ : 0.5
100H.: (0.9)
2nd speed 1/min: 300.0
Contr.-rod trav. m: 6.5...6.7
Del.quantity cm3/ : 3.0...4.0
100H.: (-)
Dispersion cm3/ : 0.6
100H.: (1.0)

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 200.0...240.0
1000H.: (196.0...244.0)

Remarks:
Full-load delivery not known. Set
according to engine test report.

Pump runs in tandem

APPLICATION
Ship

Testing:
1st c-rod trav.mm : 10.50
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00
Speed 1/min : 1210...1240
4th speed 1/min : 1350
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 9...17
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 6.4

Testing:
Speed 1/min : 100
C-rod trav.mm min : 7.80
Speed 1/min : 300
C-rod trav.mm : 6.40
C-rod trav.mm : 2.00
Speed 1/min : 400...440

TORQUE CONTROL

Dimension a mm : 0.25
Torque-control curve - 1st version
1st speed 1/min : 1100
C-rod trav.mm : 11.50...11.60
2nd speed 1/min : 700
C-rod trav.mm : 12.00...12.10
3rd speed 1/min : 1000
C-rod trav.mm : 11.60...11.80
4th speed 1/min : 850
C-rod trav.mm : 11.80...12.10

compensator (LDA,ADA,ALDA)

1st version
Setting
Speed 1/min : 500
Pressure hPa : 1200
Contr.-rod trav.mm: 12.00...12.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 9.50...9.60
2nd pressure hPa : 760
C-rod trav.mm : 11.50...11.60
3rd pressure hPa : 470
C-rod trav.mm : 10.00...10.20

FUEL-DELIVERY CHARACTERISTICS

1st version
Charge press. hPa : 1200
Speed 1/min : 700

Del.quantity cm3/ : 183.0...191.0
1000H.: (181.0...193.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 122.0...126.0
1000H.: (120.0...128.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than
full-load trav.mm: 10.50
Speed 1/min : 1145...1160

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 230.0...260.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 300
Contr.-rod trav.mm: 6.30...6.50
Del.quantity cm3/ : 14.0...20.0
1000H.: (11.0...23.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 V
Edition : 09.03.87
Superceeded : 9.86
Calibrating oil : ISO-4113

Combination no. : 0 402 640 802

Injection pump
Pump designation : PE12P120A320LS7806
EP type number : 0 412 620 805
Governor
Governor design. : RQV400...1050PA835
Governor no. : 0 421 813 581

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 390.0
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 12-1-5-9-8-3-4-11-10
 -2-6-7

SD ang. spacing°CS: 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 12.60...12.80

Del.quantity cm3/ : 17.8...18.1

100H.: (17.5...18.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 400

Contr.-rod trav. m: 5.40...5.60

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1180

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 600

Charge press. hPa : 660

Del.quantity cm3/ : 178.0...181.0

1000H.: (175.0...184.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:
1st c-rod trav.mm : 10.60
Speed 1/min : 1090...1100
2nd c-rod trav.mm : 4.00
Speed 1/min : 1195...1225
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I
Control-lever
position degrees: 8...16

Testing:
Speed 1/min : 100
C-rod trav.mm min : 6.10
Speed 1/min : 400
C-rod trav.mm : 4.40...4.60

CONSTANT REGULATION
Speed 1/min : 400...600

TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1050
C-rod trav.mm : 11.60...11.80
2nd speed 1/min : 975
C-rod trav.mm : 11.90...12.10

compensator (LDA,ADA,ALDA)

1st version
Setting
Speed 1/min : 600
Pressure hPa : 660
Contr.-rod trav.mm: 12.60...12.80

Measurement
Speed 1/min : 600
1st pressure hPa : 300
C-rod trav.mm : 10.30...10.50
2nd pressure hPa : 450
C-rod trav.mm : 11.70...11.90
3rd pressure hPa : 800
C-rod trav.mm : 12.70...12.90
4th pressure hPa : 1050
C-rod trav.mm : 13.20...13.40

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version
Charge press. hPa : 1100
Speed 1/min : 1050

Del.quantity cm3/ : 167.0...170.0
1000H.: (164.0...173.0)
Dispersion cm3/ : 8.00
1000H.: (12.00)
Charge press. hPa : 1100
Speed 1/min : 775
Del.quantity cm3/ : 199.0...201.0
1000H.: (196.0...204.0)
Dispersion cm3/ : 8.00
1000H.: 12.00
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 114.0...116.0
1000H.: (111.0...119.0)
Dispersion cm3/ : 8.00
1000H.: 12.00

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 10.60
Speed 1/min : 1090...1100

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 175.0...195.0
1000H.: (171.0...199.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 21,6 A
 Edition : 05.06.87
 Superseded : 9.86
 Calibrating oil : ISO-4113
 Combination no. : 0 402 640 803
 Injection pump
 Pump designation : PE12P120A520/5RS7116
 EP type number : 0 412 620 801
 Governor
 Governor design. : RQV300...1150PA756-1
 Governor no. : 0 421 813 584

Customer-spec. information
 Customer : MWM

Engine : TBD234V12

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values _____

START OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1-2-9-10-5-6-11-12-3
-4-7-8

SD ang. spacing^oCS: 0-30-60-90-120-150-
180-210-240-270-300-
330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 14.90...15.00

Del.quantity cm3/ : 26.0...26.2

100H.: (25.8...26.6)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300

Contr.-rod trav, m: 6.50...6.70

Del.quantity cm3/ : 3.2...3.8

100H.: (2.9...4.1)

Dispersion cm3/ : 0.6

100H.: (1.0)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1.30...1.40

2nd speed 1/min: 350

Sleeve travel mm: 1.60...2.00

3rd speed 1/min: 560

Sleeve travel mm: 2.50...2.90

4th speed 1/min: 1190

Sleeve travel mm: 8.30...8.40

5th speed 1/min: 1280

Sleeve travel mm: 9.60...9.90

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1200

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Charge press. hPa : 900

Del.quantity cm3/ : 260.0...262.0

1000H.: (258.0...266.0)

Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 52...60

Testing:

1st c-rod trav.mm : 13.90

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.00

Speed 1/min : 1300...1330

4th speed 1/min : 1400

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 14...22

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.00

Speed 1/min : 300

C-rod trav.mm : 6.50...6.70

CONSTANT REGULATION

Speed 1/min : 300...580

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 900

Contr.-rod trav.mm: 14.90...15.00

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.40...9.60

2nd pressure hPa : 625

C-rod trav.mm : 14.70...14.80

3rd pressure hPa : 250

C-rod trav.mm : 11.40...11.60

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900

Speed 1/min : 1150

Del.quantity cm3/ : 257.0...263.0

1000H.: (254.0...266.0)

Charge press. hPa : -
Speed 1/min : 500
Del. quantity cm³/ : 128.0...132.0
1000H.: (126.0...134.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 13.90
Speed 1/min : 1190...1200

STARTING FUEL DELIVERY

Speed 1/min : 100
Del. quantity cm³/ : 200.0...240.0
1000H.: (-)

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 X
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 640 804

Injection pump
Pump designation : PE12P120A32OLS7807
EP type number : 0 412 620 806
Governor
Governor design. : RQV350...1050PA842
Governor no. : 0 421 813 587

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 390.0
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 12-1-5-9-8-3-4-11-10
 -2-6-7

SD ang. spacing°CS: 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 13.50...13.70

Del.quantity cm3/ : 19.9...20.1

100H.: (19.6...20.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350

Contr.-rod trav. m: 5.40...5.60

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 350

Sleeve travel mm: 1.90...2.10

2nd speed 1/min: 700

Sleeve travel mm: 4.00...4.40

3rd speed 1/min: 1100

Sleeve travel mm: 6.80...7.20

4th speed 1/min: 1200

Sleeve travel mm: 8.30...8.70

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 600
Charge press. hPa : 660
Del. quantity cm3/ : 199.0...201.0
1000H.: (196.0...204.0)
Dispersion cm3/ : 5.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 59...67

Testing:

1st c-rod trav.mm : 11.30
Speed 1/min : 1090...1100
2nd c-rod trav.mm : 4.00
Speed 1/min : 1155...1185
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 10...18

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.10
Speed 1/min : 350
C-rod trav.mm : 5.40...5.60

CONSTANT REGULATION

Speed 1/min : 400...600

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1050
C-rod trav.mm : 12.20...12.40
2nd speed 1/min : 975
C-rod trav.mm : 12.60...12.80
3rd speed 1/min : 875
C-rod trav.mm : 13.20...13.40
4th speed 1/min : 700
C-rod trav.mm : 13.50...13.70

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 600
Pressure hPa : 660
Contr.-rod trav.mm: 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 350
C-rod trav.mm : 11.30...11.50
2nd pressure hPa : 500

C-rod trav.mm : 12.80...13.00
3rd pressure hPa : 830
C-rod trav.mm : 13.70...13.80
4th pressure hPa : 1150
C-rod trav.mm : 13.70...13.90

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1100
Speed 1/min : 1050
Del. quantity cm3/ : 170.0...174.0
1000H.: (167.0...177.0)
Dispersion cm3/ : 8.0
1000H.: (12.0)
Charge press. hPa : 1100
Speed 1/min : 750
Del. quantity cm3/ : 204.0...208.0
1000H.: (201.0...211.0)
Dispersion cm3/ : 8.0
1000H.: (12.0)
Charge press. hPa : 1100
Speed 1/min : 1050
Del. quantity cm3/ : 150.0...154.0
1000H.: (147.0...157.0)
Dispersion cm3/ : 8.0
1000H.: (12.0)
Charge press. hPa : -
Speed 1/min : 500
Del. quantity cm3/ : 136.0...138.0
1000H.: (133.0...141.0)
Dispersion cm3/ : 8.0
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.30
Speed 1/min : 1090...1100

STARTING FUEL DELIVERY

Speed 1/min : 100
Del. quantity cm3/ : 220.0...240.0
1000H.: (216.0...244.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 X1
Edition : 12.12.86
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 640 805
Injection pump
Pump designation : PE12P120A320LS7807
EP type number : 0 412 620 806
Governor
Governor design. : RQV350...1050PA842-1
Governor no. : 0 421 813 588

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 478.0
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 12-1-5-9-8-3-4-11-10
 -2-6-7

SD ang. spacing^oCS: 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 650

Contr.-rod trav.mm: 14.70...14.90

Del.quantity cm3/ : 21.7...21.9
 100H.: (21.4...22.2)

Dispersion cm3/ : 0.5
 100H.: (0.9)

2nd speed 1/min: 350
Contr.-rod trav. m: 5.60...5.80
Del.quantity cm3/ : 1.6...2.2
 100H.: (1.3...2.5)
Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 350
Sleeve travel mm: 1.90...2.10
2nd speed 1/min: 700
Sleeve travel mm: 4.10...4.50
3rd speed 1/min: 1100
Sleeve travel mm: 7.60...8.00
4th speed 1/min: 1200
Sleeve travel mm: 9.50...9.90

SLEEVE POSITION

Control-lever position
Degree: -1
Speed 1/min: 1150
Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 650
Charge press. hPa : 800
Del.quantity cm3/ : 217.0...219.0
 1000H.: (214.0...222.0)
Dispersion cm3/ : 5.00
 1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 62...70

Testing:

1st c-rod trav.mm : 14.00
Speed 1/min : 1090...1100
2nd c-rod trav.mm : 4.00
Speed 1/min : 1175...1205
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 11...19

Testing:

Speed 1/min : 100
C-rod trav.mm min : 7.20
Speed 1/min : 350
C-rod trav.mm : 5.60...5.80

CONSTANT REGULATION

Speed 1/min : 400...600

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1050
C-rod trav.mm : 15.00...15.20
2nd speed 1/min : 975
C-rod trav.mm : 15.30...15.50
3rd speed 1/min : 900
C-rod trav.mm : 15.70...15.90

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 600
Pressure hPa : 800
Contr.-rod trav.mm: 14.70...14.90

Measurement

Speed 1/min : 600
1st pressure hPa : 300
C-rod trav.mm : 11.30...11.50
2nd pressure hPa : 600
C-rod trav.mm : 13.80...14.00
3rd pressure hPa : 950

G-rod trav.mm : 14.90...15.00
4th pressure hPa : 1150
G-rod trav.mm : 15.60...15.80

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1300
Speed 1/min : 1050
Del.quantity cm3/ : 226.0...229.0
1000H.: (223.0...232.0)

Dispersion cm3/ : 8.0
1000H.: (12.0)

Charge press. hPa : 1300
Speed 1/min : 850
Del.quantity cm3/ : 244.0...248.0
1000H.: (241.0...251.0)

Dispersion cm3/ : 8.0
1000H.: (12.0)

Charge press. hPa : 1300
Speed 1/min : 1050
Del.quantity cm3/ : 164.0...167.0
1000H.: (161.0...170.0)

Dispersion cm3/ : 8.0
1000H.: (12.0)

Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 133.0...135.0
1000H.: (130.0...138.0)

Dispersion cm3/ : 8.0
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 14.00
Speed 1/min : 1090...1100

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...260.0
1000H.: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 V1
Edition : 24.8.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 640 806

Injection pump
Pump designation : PE12P120A320LS7806
EP type number : 0 412 620 805
Governor
Governor design. : RQV350...1000PA835-1
Governor no. : 0 421 813 590

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 419.0
Speed 1/min: 2000

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Contr.-rod trav.mm: 9.00...12.00
 Cam sequence : 12-1-5-9-8-3-4-11-10
 -2-6-7

SD ang. spacing^oCS: 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 12.80...13.00

Del.quantity cm3/ : 18.7...18.9
 100H.: (18.4...19.2)

Dispersion cm3/ : 0.5
 100H.: (0.9)

2nd speed 1/min: 350
 Contr.-rod trav. m: 5.70...5.90
 Del.quantity cm3/ : 1.6...2.2
 100H.: (1.3...2.5)
 Dispersion cm3/ : 0.8
 100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor**SLEEVE TRAVELS**

1st speed 1/min: 350
 Sleeve travel mm: 1.90...2.10
 2nd speed 1/min: 700
 Sleeve travel mm: 4.90...5.30
 3rd speed 1/min: 1050
 Sleeve travel mm: 8.00...8.40
 4th speed 1/min: 1200
 Sleeve travel mm: 9.40...9.80

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1180
 Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 600
 Charge press. hPa : 650
 Del.quantity cm3/ : 187.0...189.0
 1000H.: (184.0...192.0)
 Dispersion cm3/ : 5.00
 1000H.: (9.00)

HIGHEST RATED SPEED**1st version**

Control-lever
 position degrees: 115...123

Testing:

1st c-rod trav.mm : 11.30
 Speed 1/min : 1045...1060
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 10...1140
 4th speed 1/min : 300
 C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
 position degrees: 64...72

Testing:

Speed 1/min : 100
 C-rod trav.mm min : 7.20
 Speed 1/min : 350
 C-rod trav.mm : 5.70...5.90

CONSTANT REGULATION

Speed 1/min : 400...600

compensator (LDA,ADA,ALDA)

1st version**Setting**

Speed 1/min : 600
 Pressure hPa : 650
 Contr.-rod trav.mm: 12.80...13.00

Measurement

Speed 1/min : 600
 1st pressure hPa : 300
 C-rod trav.mm : 11.00...11.20
 2nd pressure hPa : 420
 C-rod trav.mm : 12.10...12.30
 3rd pressure hPa : 800
 C-rod trav.mm : 13.00...13.10

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1150

Speed 1/min : 1000

Del.quantity cm3/ : 182.0...186.0

1000H.: (179.0...189.0)

Dispersion cm3/ : 8.0

1000H.: (12.0)

Charge press. hPa : 1150

Speed 1/min : 900

Del.quantity cm3/ : 196.0...200.0

1000H.: (193.0...203.0)

Dispersion cm3/ : 8.0

1000H.: (12.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 125.0...129.0

1000H.: (122.0...132.0)

Dispersion cm3/ : 8.0

1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.30

Speed 1/min : 1045...1060

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 170.0...190.0

1000H.: (166.0...194.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 V 2
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113

Combination no. : 0 402 640 807

Injection pump
Pump designation : PE12P120A320LS7806
EP type number : 0 412 620 805
Governor
Governor design. : RQV400...1065PA835-2
Governor no. : 0 421 813 603

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 410.0
Speed 1/min: 2130

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 12- 1- 5- 9- 8- 3 -
 4- 11- 10- 2- 6- 7

SD ang. spacing^oCS: 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 13.70...13.90

Del.quantity cm3/ : 19.7...20.0

100H.: (19.4...20.3)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 400.0

Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 350

Sleeve travel mm: 1.00...1.20

2nd speed 1/min: 500

Sleeve travel mm: 3.10...3.30

3rd speed 1/min: 1100

Sleeve travel mm: 7.30...7.70

4th speed 1/min: 1225

Sleeve travel mm: 8.30...8.70

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1180

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

N01

1st version

Speed 1/min: 600

Charge press. hPa : 700

Del.quantity cm3/ : 197.0...200.0

1000H.: (194.0...203.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 57...65

Testing:

1st c-rod trav.mm : 11.70

Speed 1/min : 1105...1115

2nd c-rod trav.mm : 4.00

Speed 1/min : 1210...1240

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.10

Speed 1/min : 400

C-rod trav.mm : 4.40...4.60

CONSTANT REGULATION

Speed 1/min : 400...600

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1065

C-rod trav.mm : 12.70...12.90

2nd speed 1/min : 975

C-rod trav.mm : 13.30...13.50

3rd speed 1/min : 900

C-rod trav.mm : 13.90...14.10

4th speed 1/min : 800

C-rod trav.mm : 14.30...14.50

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 600

Pressure hPa : 700

Contr.-rod trav.mm: 13.70...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : 350

C-rod trav.mm : 11.30...11.50

2nd pressure hPa : 500

C-rod trav.mm : 12.60...12.80
3rd pressure hPa : 950
C-rod trav.mm : 14.10...14.20
4th pressure hPa : 1100
C-rod trav.mm : 14.20...14.40

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1100
Speed 1/min : 1065
Del.quantity cm3/ : 184.0...188.0
1000H.: (181.0...191.0)
Dispersion cm3/ : 8.00
1000H.: (12.0)

Charge press. hPa : 1100
Speed 1/min : 800
Del.quantity cm3/ : 212.0...216.0
1000H.: (209.0...219.0)
Dispersion cm3/ : 8.00
1000H.: (12.0)

Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 125.0...127.0
1000H.: (122.0...130.0)
Dispersion cm3/ : 8.00
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.70
Speed 1/min : 1105...1115

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 190.0...210.0
1000H.: (186.0...214.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 J
Edition : 26.06.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 640 809
Injection pump
Pump designation : PE12P120A320LS7813
EP type number : 0 412 620 809
Governor
Governor design. : RQV350...1050PA870
Governor no. : 0 421 813 640

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 552.0
Speed 1/min: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Contr.-rod trav.mm: 19.00...21.00
 Cam sequence : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

SD ang. spacing°CS: 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

BASIC SETTING

1st speed 1/mi: 650

Contr.-rod trav.mm: 14.30...14.50

Del.quantity cm3/ : 22.4...22.6

100H.: (22.1...22.9)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.2...6.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with
externally-mounted governor**SLEEVE TRAVELS**

1st speed 1/min: 350

Sleeve travel mm: 1.90...2.10

2nd speed 1/min: 700

Sleeve travel mm: 4.10...4.50

3rd speed 1/min: 1100

Sleeve travel mm: 7.60...8.00

4th speed 1/min: 1200

Sleeve travel mm: 9.50...9.90

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 650

Charge press. hPa : 850

Del.quantity cm3/ : 224.0...226.0

1000H.: (221.0...229.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 59...67

Testing:

1st c-rod trav.mm : 14.00

Speed 1/min : 1090...1100

2nd c-rod trav.mm : 4.00

Speed 1/min : 1190...1220

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED 1

Control-lever

position degrees: 9...17

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.70

Speed 1/min : 350

C-rod trav.mm : 6.20...6.40

CONSTANT REGULATION

Speed 1/min : 350...600

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1050

C-rod trav.mm : 15.40...15.60

2nd speed 1/min : 1000

C-rod trav.mm : 15.60...15.80

3rd speed 1/min : 950

C-rod trav.mm : 16.00...16.20

compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 600

Pressure hPa : 850

Contr.-rod trav.mm: 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 350

C-rod trav.mm : 11.00...11.20

2nd pressure hPa : 600

C-rod trav.mm : 13.40...13.60

3rd pressure hPa : 1200

C-rod trav.mm : 14.60...14.80
4th pressure hPa : 1400
C-rod trav.mm : 15.20...15.40

SWITCH-OVER POINT

Speed 1/min : 270 (290)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1700
Speed 1/min : 1050
Del.quantity cm3/ : 256.0...259.0
1000H.: (253.0...262.0)

Dispersion cm3/ : 8.00
1000H.: (12.00)

Charge press. hPa : 1700
Speed 1/min : 900
Del.quantity cm3/ : 270.0...274.0
1000H.: (267.0...277.0)

Dispersion cm3/ : 8.00
1000H.: (12.0)

Charge press. hPa : 1700
Speed 1/min : 1050
Del.quantity cm3/ : 185.0...188.0*
1000H.: (182.0...191.0)

Dispersion cm3/ : 8.00
1000H.: 12.00

Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 139.0...141.0
1000H.: (136.0...144.0)

Dispersion cm3/ : 8.00
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 14.00
Speed 1/min : 1090...1100

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 260.0...280.0
1000H.: (256.0...284.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0U14
Edition : 19.03.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 646 809
Injection pump
Pump designation : PE6P120A720RS7001
EP type number : 0 412 626 800
Governor
Governor design. : RQ200/1000PA616
Governor no. : 0 421 801 158

Customer-spec. information
Customer : SCANIA

Engine : DS11 15

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.20...13.30

Del.quantity cm3/ : 19.9...20.1

100H.: (19.6...20.4)

Dispersion cm3/ : 0.6

100H.: (0.9)

2nd speed 1/min: 225.0

Contr.-rod trav. m: 4.4...4.6

Del.quantity cm3/ : 1.3...1.7

100H.: (-)

Dispersion cm3/ : 0.3

100H.: (0.6)

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 600

Contr.-rod travelmm: 15.60...16.40

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 199.0...201.0

1000H.: (196.0...204.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 35...43

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 16.0

Testing:

1st c-rod trav.mm : 12.20

Speed 1/min : 1045...1060

2nd c-rod trav.mm : 4.00

Speed 1/min : 1115...1145

4th speed 1/min : 1200
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 5...13
Setting point w/out aux. spring
Speed 1/min : 225
Contr.-rod trav.mm: 4.5

Testing:

Speed 1/min : 100
C-rod trav.mm min : 5.90
Speed 1/min : 225
C-rod trav.mm : 4.50
C-rod trav.mm : 2.00
Speed 1/min : 300...340

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 900
Contr.-rod trav.mm: 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 11.60...11.70
2nd pressure hPa : 420
C-rod trav.mm : 12.80...12.90
3rd pressure hPa : 290
C-rod trav.mm : 11.90...12.10

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 1000
Del.quantity cm3/ : 193.0...201.0
1000H.: (191.0...203.0)
Charge press. hPa : -
Speed 1/min : 500
Del.quantity cm3/ : 160.0...164.0
1000H.: (158.0...166.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.20
Speed 1/min : 1045...1060

STARTING FUEL DELIVERY

N07

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 225
Contr.-rod trav.mm: 4.40...4.60
Del.quantity cm3/ : 13.0...17.0
1000H.: (-)
Dispersion cm3/ : 3.00
1000H.: (6.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on Aug. 18, 1983
Start of delivery on engine.

Engine model DS 11 - 17° before top
dead center.

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0 W2
 Edition : 24.8.87
 Superceeded : 10.85
 Calibrating oil : ISO-4113
 Combination no. : 0 402 646 812 Y
 Injection pump
 Pump designation : PE6P120A72GRS7007Y
 EP type number : 0 412 626 803
 Governor
 Governor design. : RQV200...1000PA539-2
 Governor no. : 0 421 813 359

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC 11 0

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4,50...4,60
 : (4,45...4,65)
 Contr.-rod trav.mm: 6,00...8,00

M09

Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0,50 (0,75)

SD mark cyl. no. : 1

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 7,00...14,70
 & c-rod trav max. : 21,00
 Difference °CS : 1,85...2,55

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 16,00...16,10

Del.quantity cm3/ : 22,5...22,7

100H.: (22,2...23,0)

Dispersion cm3/ : 0,7

100H.: (1,0)

2nd speed 1/min: 225

Contr.-rod trav. m: 4,40...4,60

Del.quantity cm3/ : 1,4...1,8

100H.: (-)

Dispersion cm3/ : 0,3

100H.: (0,6)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 225

Sleeve travel mm: 1,30...1,40

2nd speed 1/min: 340

Sleeve travel mm: 2,30...2,70

3rd speed 1/min: 550

Sleeve travel mm: 3,90...4,20

4th speed 1/min: 1045

Sleeve travel mm: 8,10...8,30

5th speed 1/min: 1170

Sleeve travel mm: 9,70...10,00

SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1070

Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700
Charge press. hPa : 900
Del. quantity cm3/ : 225,0...227,0
1000H.: (222,0...230,0)
Dispersion cm3/ : 7,0
1000H.: (10,0)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 58...66

Testing:

1st c-rod trav.mm : 15,00
Speed 1/min : 1040...1050
2nd c-rod trav.mm : 4,00
Speed 1/min : 1175...1205
4th speed 1/min : 1300
C-rod trav.mm : 0,00...1,00

LOWEST RATED SPEED I

Control-lever
position degrees: 5...13

Testing:

Speed 1/min : 100
C-rod trav.mm min : 5,90
Speed 1/min : 225
C-rod trav.mm : 4,40...4,60
C-rod trav.mm : 2,00
Speed 1/min : 310...370

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 900
Contr.-rod trav.mm: 16,00...16,10

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 11,80...11,90
2nd pressure hPa : 410
C-rod trav.mm : 14,00...14,10
3rd pressure hPa : 290
C-rod trav.mm : 12,40...12,60

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 1000
Del. quantity cm3/ : 216,0...224,0
1000H.: (214,0...226,0)
Charge press. hPa : -

N10

Speed 1/min : 500
Del. quantity cm3/ : 164,0...168,0
1000H.: (162,0...170,0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 15,00
Speed 1/min : 1040...1050

STARTING FUEL DELIVERY

Speed 1/min : 100
Del. quantity cm3/ : 240,0...290,0
1000H.: (-)
Contr.-rod trav.mm: 20,00...21,00

LOW IDLE

Speed 1/min : 225
Contr.-rod trav.mm: 4,40...4,60
Del. quantity cm3/ : 14,0...18,0
1000H.: (-)
Dispersion cm3/ : 3,0
1000H.: (6,0)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Firing sequence of engine:
1-5-3-6-2-4.

Start of delivery - engine: 22° before
TDC at control-rod travel = 6.0...
8.0 mm

Test specifications approved by Scania
on 1984-12-19

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0 V3
 Edition : 24.8.87
 Superceeded : 8.85
 Calibrating oil : ISO-4113
 Combination no. : 0 402 646 814
 Injection pump
 Pump designation : PE6P120A72ORS7004
 EP type number : 0 412 626 801
 Governor
 Governor design. : RQ900PA528-2
 Governor no. : 0 421 801 204

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DN 11 40

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 850

 Contr.-rod trav.mm: 10.60...10.70

 Del.quantity cm3/ : 16.2...16.4

 100H.: (15.9...16.7)

 Dispersion cm3/ : 0.5

 100H.: (0.8)

SLEEVE POSITION

Control-lever position
 Degree: 45...47
 Speed 1/min: 600
 Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 850
 Del.quantity cm3/ : 162.0...164.0
 1000H.: (159.0...167.0)
 Dispersion cm3/ : 5.00
 1000H.: (8.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 16...24

Setting point:
 Speed 1/min : 600
 Contr.-rod trav.mm: 16,5

Testing:
 1st c-rod trav.mm : 9.60
 Speed 1/min : 900...905
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 934...948
 4th speed 1/min : 1000
 C-rod trav.mm : 0.00...1.00

ROTATIONAL-SPEED LIMITATION

1st version

Imm control-rod travel less than

full-load trav.mm: 9.60
Speed 1/min : 900...905

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

HIGH IDLE

Contr.-rod trav.mm: 4.90...5.10
Dispersion cm3/ : 4.00
1000H.: (7.00)

ADDITIONAL INFORMATION

emarks:

Check and set without R0B0 diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1984-09-19
Engine start of delivery: 18° BTDC

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0 V4
 Edition : 24.8.87
 Supersceded : 8.85
 Calibrating oil : ISO-4113
 Combination no. : 0 402 646 815
 Injection pump
 Pump designation : PE6P120A72ORS7004
 EP type number : 0 412 626 801
 Governor
 Governor design. : RQ750PA528-1
 Governor no. : 0 421 801 203

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DN 11 40

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values _____

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

 Contr.-rod trav.mm: 10.60...10.70

 Del.quantity cm3/ : 15.5...15.7

 100H.: (15.2...16.0)

 Dispersion cm3/ : 0.5

 100H.: (0.8)

SLEEVE POSITION

Control-lever position
 Degree: 45...47
 Speed 1/min: 600
 Contr.-rod travelmm: 15,20...17,80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
 Speed 1/min: 700
 Del.quantity cm3/ : 155.0...157.0
 1000H.: (152.0...160.0)
 Dispersion cm3/ : 5.00
 1000H.: (8.00)

HIGHEST RATED SPEED

1st version
 Control-lever
 position degrees: 21...29

Setting point:
 Speed 1/min : 600
 Contr.-rod trav.mm: 16,5

Testing:
 1st c-rod trav.mm : 9.60
 Speed 1/min : 750...755
 2nd c-rod trav.mm : 4.00
 Speed 1/min : 773...786
 4th speed 1/min : 850
 C-rod trav.mm : 0.00...1.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.60
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

HIGH IDLE

Contr.-rod trav.mm: 4.90...5.10
Dispersion cm3/ : 4.00
1000H.: (7.00)

ADDITIONAL INFORMATION

emarks:

Check and set without ROB0 diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1984-09-19

Engine start of delivery: 18° BTDC

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0 J1
 Edition : 13.05.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 402 646 821
 Injection pump
 Pump designation : PE6P120A72ORS7104
 EP type number : 0 412 626 807
 Governor
 Governor design. : RGV200...1000PA725
 Governor no. : 0 421 813 457

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC 11 01

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Contr.-rod trav.mm: 6.00...8.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing⁰CS: 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 7.00...14.70
 & c-rod tray max. : 21.00
 Difference⁰ CS : 1.85...2.55

BASIC SETTING

1st speed 1/mi: 700

 Contr.-rod trav.mm: 14.70...14.80

 Del.quantity cm3/ : 21.0...21.2

 100H.: (20.7...21.5)

 Dispersion cm3/ : 0.7

 100H.: (1.0)

 2nd speed 1/min: 225.0
 Contr.-rod trav. m: 4.4...4.6
 Del.quantity cm3/ : 1.4...1.8
 100H.: (-)
 Dispersion cm3/ : 0.3
 100H.: (0.6)

(B) Setting of injection pump with
 externally-mounted governor

SLEEVE TRAVELS

1st speed 1/min: 225
 Sleeve travel mm: 1.20...1.40
 2nd speed 1/min: 270
 Sleeve travel mm: 1.80...2.10
 3rd speed 1/min: 340
 Sleeve travel mm: 2.40...2.80
 4th speed 1/min: 1040
 Sleeve travel mm: 8.40...8.60
 5th speed 1/min: 1170
 Sleeve travel mm: 10.10...10.40

SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed 1/min: 1050
 Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700
Charge press. hPa : 900
Del.quantity cm3/ : 210.0...212.0
1000H.: (207.0...215.0)
Dispersion cm3/ : 7.00
1000H.: (10.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 59...67

Testing:

1st c-rod trav.mm : 13.70
Speed 1/min : 1040...1050
2nd c-rod trav.mm : 4.00
Speed 1/min : 1150...1180
4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 5...13

Testing:

Speed 1/min : 100
C-rod trav.mm min : 5.90
Speed 1/min : 225
C-rod trav.mm : 4.40...4.60
C-rod trav.mm : 2.00
Speed 1/min : 310...370

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 900
Contr.-rod trav.mm: 14.70...14.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 11.80...11.90
2nd pressure hPa : 410
C-rod trav.mm : 14.00...14.10
3rd pressure hPa : 290
C-rod trav.mm : 12.40...12.60

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 1000
Del.quantity cm3/ : 205.0...213.0
1000H.: (203.0...215.0)
Speed 1/min : 500

Del.quantity cm3/ : 164.0...168.0
1000H.: (162.0...170.0)

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 13.70
Speed 1/min : 1040...1050

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 225
Contr.-rod trav.mm: 4.40...4.60
Del.quantity cm3/ : 14.0...18.0
1000H.: (-)
Dispersion cm3/ : 3.00
1000H.: (6.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on May 17, 1984
22° before top dead center with
control-rod travel 6.0...8.0 mm.

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 9,0 B
Edition : 09.03.87
Superceeded : 10.85
Calibrating oil : ISO-4113
Combination no. : 0 402 646 822
Injection pump
Pump designation : PE6P120A320RS7102
EP type number : 0 412 626 804
Governor
Governor design. : RQ200/1000PA745
Governor no. : 0 421 801 283

Customer-spec. information
Customer : SCANIA

Engine : DS9 03

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 12.00...12.10

Del.quantity cm3/ : 16.3...16.5

100H.: (16.0...16.8)

Dispersion cm3/ : 0.6

100H.: (0.9)

2nd speed 1/min: 225

Contr.-rod trav. m: 5.00...5.20

Del.quantity cm3/ : 1.5...1.9

100H.: (1.2...2.2)

Dispersion cm3/ : 0.3

100H.: (0.6)

SLEEVE POSITION

Control-lever position

Degree: 45...47

Speed 1/min: 600

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 163.0...165.0

1000H.: (160.0...168.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 36...44

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 16.5

Testing:

1st c-rod trav.mm : 11.00

Speed 1/min : 1245...1060

2nd c-rod trav.mm : 4.00

Speed 1/min : 1180...1210

4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 6...14
Setting point w/out aux. spring
Speed 1/min : 225
Contr.-rod trav.mm: 4.9

Testing:

Speed 1/min : 100
C-rod trav.mm min : 6.30
Speed 1/min : 225
C-rod trav.mm : 4.90
C-rod trav.mm : 2.00
Speed 1/min : 310...350

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 900
Contr.-rod trav.mm: 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 11.30...11.40
2nd pressure hPa : 420
C-rod trav.mm : 11.70...11.80
3rd pressure hPa : 380
C-rod trav.mm : 11.50...11.70

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 1000
Del.quantity cm3/ : 162.0...170.0
1000H.: (160.0...172.0)
Speed 1/min : 500
Del.quantity cm3/ : 141.0...145.0
1000H.: (139.0...147.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than
full-load trav.mm: 11.00
Speed 1/min : 1045...1060

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 225
Contr.-rod trav.mm: 4.80...5.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1986-10-02
Start of delivery - engine: 15° before
TDC
Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 9,0 H
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 646 824
Injection pump
Pump designation : PE6P120A32ORS7111
EP type number : 0 412 626 809
Governor
Governor design. : RQ75OPA758
Governor no. : 0 421 801 297

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 9 46,47

TEST BENCH REQUIREMENTS

Calibrating-oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 12.30...12.40

Del.quantity cm3/ : 17.7...17.9

100H.: (17.4...18.2)

Dispersion cm3/ : 0.6

100H.: (0.9)

SLEEVE POSITION

Control-lever position

Degree: 45...47

Speed 1/min: 600

Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 177.0...179.0

1000H.: (174.0...182.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 18...26

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 16,5

Testing:

1st c-rod trav.mm : 11.30

Speed 1/min : 750...755

2nd c-rod trav.mm : 4.00

Speed 1/min : 784...797

4th speed 1/min : 850

C-rod trav.mm : 0.00...1.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.30
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

HIGH IDLE

Contr.-rod trav.mm: 5.80...6.00
Dispersion cm3/ : 4.00
1000H.: (7.00)

ADDITIONAL INFORMATION

emarks:

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
1987-01-08

Start of delivery - engine: 15° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 9,0 H1
Edition : 09.03.87
Superceeded : -
Calibrating oil : ISO-4113
Combination no. : 0 402 646 825
Injection pump
Pump designation : PE6P120A32ORS7111
EP type number : 0 412 626 809
Governor
Governor design. : RQ900PA758-1
Governor no. : 0 421 801 298

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 9 46,47

TEST BENCH REQUIREMENTS

Calibrating-pil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Perforated-plate
diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set constant delivery quant.
per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 850

Contr.-rod trav.mm: 12.30...12.40

Del.quantity cm3/ : 17.9...18.1

100H.: (17.6...18.4)

Dispersion cm3/ : 0.6

100H.: (0.9)

SLEEVE POSITION

Control-lever position
Degree: 45...47
Speed 1/min: 600
Contr.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version
Speed 1/min: 850
Del.quantity cm3/ : 179.0...181.0
1000H.: (176.0...184.0)
Dispersion cm3/ : 6.00
1000H.: (9.00)

HIGHEST RATED SPEED

1st version
Control-lever
position degrees: 19...27

Setting point:
Speed 1/min : 600
Contr.-rod trav.mm: 16.5

Testing:
1st c-rod trav.mm : 11.30
Speed 1/min : 900...905
2nd c-rod trav.mm : 4.00
Speed 1/min : 941...955
4th speed 1/min : 1000
C-rod trav.mm : 0.00...1.00

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.30
Speed 1/min : 900...905

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

HIGH IDLE

Contr.-rod trav.mm: 5.70...5.90
Dispersion cm3/ : 4.00
1000H.: (7.00)

ADDITIONAL INFORMATION

emarks:

Check and set without RO80 diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
1987-01-08

Start of delivery - engine: 15° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator

1st version
Control-lever
position degrees: 57...65

Testing:
1st c-rod trav.mm : 12.30
Speed 1/min : 940...950
2nd c-rod trav.mm : 4.00
Speed 1/min : 1020...1050
4th speed 1/min : 1150
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED :
Control-lever
position degrees: 8...16

Testing:
Speed 1/min : 100
C-rod trav.mm min : 6.80
Speed 1/min : 350
C-rod trav.mm : 5.20...5.40

CONSTANT REGULATION
Speed 1/min : 415...535

ROTATIONAL-SPEED LIMITATION

1st version
1mm control-rod travel less than

full-load trav.mm: 12.30
Speed 1/min : 940...950

LOW IDLE

Speed 1/min : 350
Contr.-rod trav.mm: 5.20...5.40
Del.quantity cm3/ : 24.0...30.0
1000H.: (20.0...34.0)
Dispersion cm3/ : 10.00
1000H.: (14.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,0U16
 Edition : 09.03.87
 Superceeded : -
 Calibrating oil : ISO-4113
 Combination no. : 0 402 646 827
 Injection pump
 Pump designation : PE6P120A72ORS7001
 EP type number : 0 412 626 800
 Governor
 Governor design. : RQ200/1000PA713-1
 Governor no. : 0 421 801 324

Customer-spec. information
 Customer : SCANIA

Engine : DS11 29

TEST BENCH REQUIREMENTS

Calibrating-oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Perforated-plate
 diameter mm : 0.8

Test inj. tubing : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set constant delivery quant.
 per values -----

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing^oCS: 0-60-120-180-240-300
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 16.1...16.3

100H.: (15.8...16.6)

Dispersion cm3/ : 0.5

100H.: (0.8)

2nd speed 1/min: 225.0

Contr.-rod trav. m: 4.9...5.1

Del.quantity cm3/ : 1.3...1.7

100H.: (-)

Dispersion cm3/ : 0.3

100H.: (0.6)

SLEEVE POSITION

Control-lever position

Degree: 101...103

Speed 1/min: 600

Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 161.0...163.0

1000H.: (158.0...166.0)

Dispersion cm3/ : 5.00

1000H.: (8.00)

HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 35...43

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 16.5

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1045...1060

2nd c-rod trav.mm : 4.00

Speed 1/min : 1175...1205

4th speed 1/min : 1300
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever
position degrees: 5...13
Setting point w/out aux. spring
Speed 1/min : 225
Contr.-rod trav.mm: 4.5

Testing:

Speed 1/min : 100
C-rod trav.mm min : 5.90
Speed 1/min : 225
C-rod trav.mm : 4.50
C-rod trav.mm : 2.00
Speed 1/min : 300...340

compensator (LDA,ADA,ALDA)

1st version

Setting
Speed 1/min : 500
Pressure hPa : 900
Contr.-rod trav.mm: 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
C-rod trav.mm : 10.40...10.50
2nd pressure hPa : 220
C-rod trav.mm : 11.40...11.50
3rd pressure hPa : 165
C-rod trav.mm : 10.50...10.70

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900
Speed 1/min : 1000
Del.quantity cm3/ : 160.0...168.0
1000H.: (158.0...170.0)
Speed 1/min : 500
Del.quantity cm3/ : 120.0...124.0
1000H.: (118.0...126.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than
full-load trav.mm: 10.70
Speed 1/min : 1045...1060

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 225
Contr.-rod trav.mm: 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1986-06-04
Start of delivery - engine: 15° before
TDC
Firing sequence of engine:
1-5-3-6-2-4.

Omnibus